CONNICAL CONSOLIDATED WITH THE FERTILIZER GREEN BOOK

ANNOUNCING a new name for a familiar product...

NITRANA Solutions

"NITRANA" is the new name for the Nitrogen Solutions well known and widely used by the fertilizer industry for many years as Barrett* Standard Nitrogen Solutions.

Production and sales of "Nitrana" Solutions are handled by the same personnel that has functioned heretofore—your assurance of the same high standards of product quality and dependable service that made these Solutions a leading source of nitrogen in mixed fertilizers.

"Nitrana" Solutions are produced in four different forms adapted to various fertilizer manufacturing operations prevalent in the industry. All of these Solutions are economical sources of nitrate and ammonia nitrogen and serve as excellent curing media to quickly condition superphosphate mixtures to granular, free-running fertilizers.

In addition to supplying the most complete line of Nitrogen Solutions available to the fertilizer industry, Nitrogen Division maintains a staff of trained technical men to assist customers in the proper use of "Nitrana" Solutions in formulating better fertilizers. This service is based on many years of Solutions experience.

URANA[†] Solution
Anhydrous Ammonia
ARCADIAN^{*},
the American Nitrate of Soda
A-N-L^{*} Nitrogen Fertilizer
Urea Products
Sulphate of Ammonia
NYTRON^{*}
(Synthetic Organic Detergent)

tReg. Applied For

Reg. U. S. Pat. Off.

"NITRANA" Solutions

	Ammonium Nitrate %	Anhydrous Ammonia %	Water %	Approx. Vap. Press. @ 104° F. per sq. in. Gauge	Approx. Temp. at which Salt begins to Crystallize
"Nitrana" Solution 2A	65.0	21.7	13.3	10 lbs.	23° F.
"Nitrana" Solution 3	55.5	26.0	18.5	16 lbs.	-13° F.
"Nitrana" Solution 4	66.8	16.6	16.6	1 lb.	48° F.
"Nitrana" Solution 6	60.0	34.0	6.0	29 lbs.	−22° F.

Nitrogen Division

ALLIED CHÉMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK 6, N. Y.

RICHMOND 19, VA. . SOUTH POINT, OHIO . HOPEWELL, VA. . COLUMBIA 1, S. C. . ATLANTA 3, GA. . SAN FRANCISCO 3, CAL.

serving over 100 principal industries through AA Quality factories and sales offices



AA Quality

principal industrial centers, assure dependable service.

Bone Products



for over 85 years a symbol of quality and reliability

principal AA Quality products

All grades of Florida Pebble Phosphate Rock **AA QUALITY Ground Phosphate Rock** All grades of Commercial Fertilizers Superphosphate Sulphuric Acid Insecticides and Fungicides **Phosphoric Acid and Phosphate Phosphorus and Compounds of Phosphorus Fluosilicates** Salt Cake

Ammonium Carbonate

Gelatin

GENERAL OFFICE: 50 CHURCH STREET, NEW YORK'7, N.Y.

30 FACTORIES AND SALES OFFICES, SERVING U. S., CANADA AND CUBA-ASSURE DEPENDABLE SERVICE

aproot of success...

Just as quality in the fertilizers you manufacture assures growth for the farmers' crops, just as surely does that reputation for quality assure growth for the manufacturers' business. For the very taproot of success in any business is the insistence upon quality in the goods produced.

There is no higher quality source of nitrogen for your Fertilizers than SMIROW TANKAGE. It is 100% natural organic. It is 90% water insoluble and 90% available. SMIROW TANKAGE is always in perfect mechanical condition . . . another mark of quality. It is uniform both in color and in texture.

To feed this taproot of the successful growth of your operation see that correct proportions of SMIROW TANKAGE assure outstanding quality in your goods.

To help make your sales grow, write for samples and prices.



SMIROW TANKAGE MAKES PLANTS GROW



WLAND COMPANY

NIA . CHEMICAL, ILLINOIS



THREE ELEPHANT AGRICULTURAL PENTAHYDRATE BORAX

COMPOSITION Contains a minimum of 44% B_2O_3 or approximately 121% equivalent Borax. ADVANTAGE More economical because the Borate in this form is more concentrated.

PURPOSE To correct deficiency of Boron in the soil.

RECOMMENDED USES As an addition to mixed fertilizer, or for direct application to the soil.

FOR CORRECT APPLICATION Consult your local County Agent or State Experimental Station.

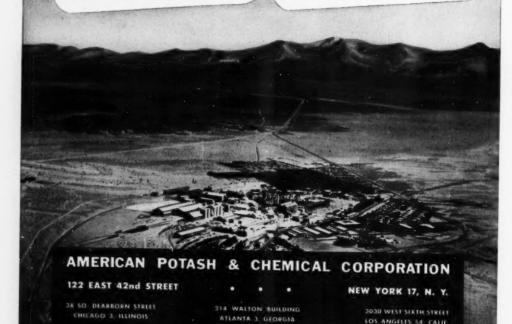


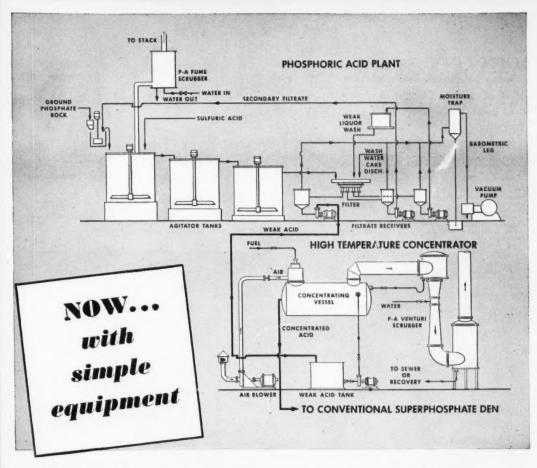
TRONA MURIATE OF POTASH

IMPORTANCE Muriate of Potash is a vitally important ingredient which provides the soil nutriment so essential in the formulation of good mixed fortilizers.

PURPOSE To help resist plant diseases and enhance the productivity of crops.

TO ASSURE EFFECTIVE RESULTS Specify "Trona"
Muriate of Potash . . made by the pioneer producers of Muriate in America.





High Strength Phosphate Fertilizers

A series of tests and demonstration runs at Hattiesburg, Mississippi, has shown that enriched and triple superphosphate fertilizers can be produced on a commercial basis in conventional single superphosphate dens. This is accomplished by substituting phosphoric acid for sulfuric acid in the manufacturing process.

The diagrams above illustrate successful Chemico methods for (1) the production of phosphoric acid by the wet process; (2) the concentration of the phosphoric acid in a Chemico high temperature concentrator. By adding these facilities to your plant, enriched superphosphates (26 to 28% A.P.A.) or triple superphosphates (up to 47% A.P.A.) can readily be produced. Chemico also offers complete triple superphosphate plants.

For further information, write us giving details on your specific problem.

CHEMICAL CONSTRUCTION CORPORATION

A UNIT OF AMERICAN CYANAMID COMPANY

488 MADISON AVENUE, NEW YORK 22, N. Y.

CABLES: CHEMICONST, NEW YORK

TECHNICAL REPRESENTATIVES: CYANAMID PRODUCTS LTD., LONDON . CHEMICAL CONSTRUCTION
(INTER-AMERICAN) LTD., TORONTO . SOUTH AFRICAN CYANAMID (PTY) LTD., JOHANNESBURG



Chemico plants are profitable investments

ADVERTISING INDEX

THE TANKE BURNESS	_
Albemorie Paper Manufacturing Co., The	.57 vei
American Agricultural Chemical Co., The Ins	ide ve:
American Potash & Chemical Corp.	33
Atlanta Utility Works	-17
Bagpak Division (International Paper Co.) Baker and Bro. H. J.	51
Bagpak Division (International Paper Co.) Baker and Bro. H. J. Baughman Mfg. Company Bemis Bro. Bag Co. Berkshire Chemicals, Inc.	55
Bradley Pulverizer So. Chase Bay Co. Chemical Construction Corp.	34
	67
Devidson-Kennedy Ce. Devisen Chemical Corp., The Dings Magnetic Separater Co. Equitable Paper Bog Co., Inc.	
Equitable Paper Bag Co., Inc. Exact Weight Scale Co., The Fulton Bag & Cotton Mills	21
Tenon Day & Conton Management of the control of the conton	44
Hammond Bog & Paper Company Harte Company, John J. Highway Equipment Co.	3
Highway Equipment Co. Hough Company, The Frank G. Hudsen Pulp & Paper Corporation 27-45	-51
Industrial Marking Equipment Co	6
International Paper Co. (Bagpak Div.)	51
Jaite Company, The Jeffrey Mig. Co. Johnson Company, C. S.	70
Keppers Co., Inc. Kraft Bug Corporation	5
Low and Co. Lion Oil Company	4
McCloskey Co. of Pittsburgh. McIver and Son, Alex. M. Marietta Concrete Corp., The	71
Marietta Concrete Corp., The	5
Mente and Co., Inc. Monsante Chemical Co.	2
National Cotton Council, The National Lime & Stone Co., Inc. Nitrogen Division (Allied Chemical &	61
Dye Corp.) Front Co Phillips Chemical Co.	15
	64
Potash Co. of America Inside Back Co Quaker Outs Co., The Ranseme Industrial Mixer Division	
Quaker Outs Co., The Ranssome Industrial Mixer Division Raymond Bag Co., The Sackett & Sons Co., The A. J. 38 Smith-Rawland Co., Inc. Southern Fert. & Chemical Co. Southern Lead Burning Co. Southern Lead Burning Co. Southern State Phos. & Fert. Co. Southwest Patesh Corporation, The Spencer Chemical Co.	11
Smith-Rowland Co., Inc., Southern Fert, & Chemical Co.	6
Southern Lead Burning Co	41
Southwast Potash Carperation, The Spencer Chemical Co. Spencer Co. Spencer Co. Spencer Co. Spencer Chemical Co. J. M. Union Bog & Paper Corporation Union Special Machine Back Co. United States Steel Corp. Subsidiaries, Coal Chemical Soles Div. Webster Manufacturing Co. Werner, Edward A. Willey and Company Willingham-Little Stone Co. Welley and Company Willingham-Little Stone Co. Wedenter Company Company Willingham-Little Stone Co.	4
Sturtevent Mill Company	12
Texas Oulf Sulphur Company	
Tull Metal & Supply Co., J. M.	2
Union Special Machine Back Co United States Potash Co., Inc.	ve
United States Potash Co., Inc. United States Steel Corp. Subsidiaries,	
Webster Manufacturing Co	41
Wiley and Company	61
Willingham-Little Stone Co. Weedward & Dickerson, Inc. Worthington Pump & Machinery Corp.,— Ransome Industrial Mixer Div.	4
Worthington Pump & Machinery Corp.,— Rensome Industrial Mixer Div.	

Published Monthly by

WALTER W. BROWN PUBLISHING CO., INC.

75 Third St. N. W., Atlanta, Georgia

Phone Atwood 4160

ERNEST H. ABERNETHY, President

BRUCE MORAN, Editor V. T. CRENSHAW, Business Manager

Subscription rates: United States, \$3.00 per year. Foreign \$5.00 per year.

In This Issue

Just Around the Corner, by VERNON MOUNT. 10
Disaster Loan Program
It Seems to Me, by BRUCE MORAN 19
Industry Calendar
Better Proteins from Better Soils, by WM. A. ALBRECHT
Southwide Chemical Conference
Fertilizer Distribution in South Carolina, by B. D. CLOANINGER 26
Program of S. C. Plant Food Educational Society
Sulphur Resources
Abstracts of Fertilizer Section ACS
Around the Map48
Obituaries
Personals
Fertilizer Safety Section Program
Markets
Grasslands Congress
Farm Chemicals
Classified Advertising

Chicago Representative ELON A. ABERNETHY 1323 S. Michigan Ave.—Room 400 Phone Harrison 7-3655

West Coast Representative
M. A. CALDWELL
2267 W. 24th St., Los Angeles, Cal.
Phone REPUBLIC 1-3050

COMMERCIAL FERTILIZER, entered as second class matter, October 12, 1910, at the post office at Atlanta, under the Act of March 3, 1879. Published monthly except semi-monthly in September, by Walter W. Brown Publishing Co., Inc., 75 Third St., N. W., Atlanta Georgia.

WE CALL 'EM

Waterproof Bags







... BUT ... THIS KIND OF PROTECTION IS ONLY ONE OF THEIR FUNCTIONS

Bemis Waterproof Laminated Textile Bags are extra strong, and they're specially constructed to guard against:

Change in moisture content

Sifting

Escape of undesirable odors

Up to 5-Layer Constuction :

- 1. Flexible creped kraft paper
- 2. Waterproof adhesive
- 3. Middle layer of paper
- 4. Waterproof adhesive
- 5. Outer layer of burlap or cotton

* This may be parchment paper, or various plastic films, depending upon your requirements.

If you have a "hard-to-pack" product or one that must stand the rough handling of I. c. l., truck, or export shipment, it will pay you to investigate the advantages of Bemis Waterproof Bags.



Loss from

tearing

snagging and

Bemis

408 Pine Street, Box 46, St. Louis 2, Ma.

MAYBE YOU NEED THESE, TOO

If you don't require the exceptional protection of Bemis Waterproof Bags, Bemis Multiwall, Cotton or Burlap Bags are your best bet.

WHATEVER KIND OF BAG YOU NEED, WE MAKE IT!



Resistance to corrosion is one of the important factors taken into consideration when McCloskey designs and builds your fertilizer plant. Substantial and compact sections are provided for the frame which is readily protected with acid resistant coatings to insure long life and low maintenance.

Other design advantages include greater resistance to damage than wood

frame or light, space consuming truss construction. The danger of fire loss is eliminated. Clear overhead is provided for conveyor systems, high stacking of material, and the need for eccentric profiles in fertilizer manufacturer are all engineered into your building by McCloskey. Before you plan a new plant ask McCloskey to give you the benefit of their many years of experience in this field. We will save you time and money.

McCloskey Company of Pittsburgh

Engineers and Builders
3412 LIBERTY AVENUE, PITTSBURGH 1, PA.



The least expensive and most satisfactory package for many chemical products is a paper bag

f you manufacture dry chemicals sold in units up to 25 lbs., you probably can package effectively in paper bags—at substantial savings.

Union's versatile CHEM-PAK bags can provide the kinds of protection your products need. They are sift-proof. They are being made to lock out moisture, odor, grease, vapor, corrosion. They resist rough handling. They also can retard flavor loss and product deterioration.

You pay less for CHEM-PAK than for other comparable packages. You save on filling, sealing and handling costs. You reduce freight charges. You cut losses from package damage or breakage.

Measure your present container against CHEM-PAK. Send for new Package Evaluator or ask to see a Union representative.

CHEM-PAK

UNION BAG



New York: Woolworth Building Chicago: Daily News Building

NEW! Mail this coupon for practical CHEMICAL PACKAGE EVALUATOR. No charge or obligation.

Union Bag & Paper Corporation Woolworth Building, New York 7

Please send me the new Chemical Package Evaluator.

Name_____Title___

Company

Address

ity_____ Zone__ State C4 2

Union's modernized plant at Hudson Falls, N. Y. Billion-bag specialty packaging headquarters.



CHEM-PAK BAGS FOR FERTILIZERS—MSECTICIDES, FUNGICIDES, DUSTING POWDERS—PLANT FOODS—WALL SIZE—PASTE FLOUR—PATCHING PLASTER —PREPARED CEMENT—PLASTER OF PARIS—PHANACEUTICAL CHEMICALS—OVES AND
FIGWENTS—SANITARY CHEMICALS—POWDER SHAWPOOS—CHLORINE COMPOUNDS
AND ALKALIDES — CAULKING, SEALING, WHITING AND FILLING COMPOUNDS—
AND OTHER DRY CHEMICALS WITH COMPARABLE PACKAGING REQUIREMENTS



JUST AROUND THE CORNER

By Vernon Mount



TWO GENTLEMEN are running for President of the United States. Both are fine, intelligent, well-trained men. Both are good administrators and have proved it. Both start off apparently without strings on them. Both start off very close to idealogical center-one slightly to left, the other slightly to the right.

ENTANGLEMENTS DEVELOP around a candidate. Compromise is the basic premise of politics. And the pressure of a party that wants to win is very strong on the candidate, no matter how earnestly he wants to be able to say honestly that he wears no man's collar.

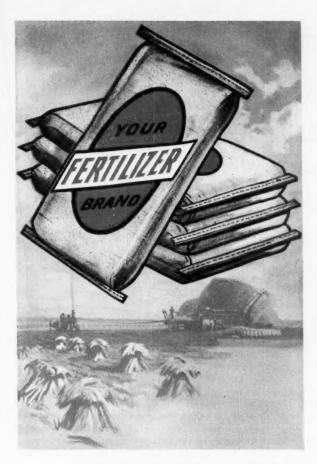
YOUR DECISION RESTS on which of the two parties will influence its candidate least, or in the best directions. It rests on which candidate, regardless of platforms or "policy" speeches, will be most likely to run the Government for the good of the people and business. It rests on your opinion of which man can best resist the tremendous pressure of international, sectional, minority and special-pleading groups.

STRAWS IN THE WIND will tell you more than major pronouncements. Watch the little things which are buried in the news-stories, or even in the back part of the paper. The vote this year is much more important than it has ever been in your lifetime, or that of your father and grandfather.

WEIGH IT WELL.

Yours faithfully,

Vernon Mount



A fine harvest depends upon many things. However, today, good commercial fertilizers mean more to crop success than any other one commodity

PAPER SHIPPING SACKS

... with built-in sturdiness to withstand unusual shipping hazards

Pack and ship your fertilizer in Raymond Multi-Wall Paper Shipping Sacks . . . the CUSTOM BUILT Shipping Sacks that are made-to-order for your products.

These strong, dependable Paper Shipping Sacks are made in various types, sizes, and strengths. Available printed in multi-colors or plain. They are dust-proof, sift-proof, and water-resistant.

A Raymond representative will be glad to assist you in selecting the perfect Raymond Shipping Sack for your particular packing and shipping needs. Wire, write, or phone Raymond today.

THE RAYMOND BAG COMPANY, Middletown, O.

Sturtevant Fertilizer Equipment

Increases Production...
Cuts Costs of Fertilizer
Manufacture

Announcing the New Continuous Superphosphate Manufacturing Process

For over 50 years, the Sturtevant Mill Company has been a leader in the design and manufacture of fertilizer equipment. Equipment that has cut costs, increased tonnage throughout Because.

Because of the demand for a continuous process for making superphosphate, Sturtevant proudly announces its Continuous Den to make the same high grade material as has been produced for years in the Batch Den and Excavator. If you are planning to install a continuous superphosphate system, investigate this equipment, today.

Either the Continuous Den or the Batch Den produces super in excellent physical condition with low insoluble and moisture content.

Sturtevent
Den & Excavator

Produces Quality
Superphosphate
Economically

The Sturtevant Den and Excavator Units provide a complete method of producing superior, bulky superphosphate either single, enriched

or triple... quickly and economically. The Batch Den is easily operated by two men to produce 16 to 40 tons per batch and up to 480 tons per day while the Continuous Dens are designed for 12 or more tons per hour. Ruggedly built, they require little if any maintenance.

Sturtevant Granulation Process

Sturtevant fertilizer granulating units provide you with a complete process for manufacturing granular fertilizer. These efficient units can be supplied for various hourly tonnages and certain granule sizes depending on your particular requirements.

Write for complete information about Sturtevant Mill Fertilizer Equipment. Sturtevant Mill COMPANY

111 CLAYTON STREET . BOSTON 22, MASSACHUSETTS



The Advantages in Using EXACT WEIGHT Sacking Scales . . .

Several advantages are present when you use EXACT WEIGHT Sacking Scales for fertilizer packaging. They are absolute accuracy; savings in time and labor costs through speed of operation; trouble-free operation; simple construction for easy maintenance; rugged construction to stand hard use; constant improvement in manufacture. The leading advantages are speed and accuracy, both of which are built into every EXACT WEIGHT Sacking Scale, and have been for many years. Evidence of their soundsess and popularity are all around you. In all types of free-flowing chemical operations these famous scales have proven their speed, economy and dependability for packaging volume tonnage at a profit. Write for full details for your plant.

SALES and SERVICE in all Principal Cities from Coast to Coast and Canada.



906 W. Fifth Avenue 2920 Bloor St., W

Columbus 8, Ohio Toronto 18, Canada



ERALS MIXED TO YOUR OWN SPECIFICAT

MINERALS ARE ESSENTIAL TO OPTIMUM CROP PRODUCTION

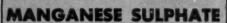
One of the country's foremost producers of Agricultural

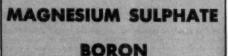
Chemicals and Soluble Mineral Salts



COPPER SULPHATE

ZINC SULPHATE





FERRIC IRON SULPHATE







Producers Of

And Special Mineral Mixtures For Fertilizer Manufacturers

For further information phone, wire or write

TENNESSEE

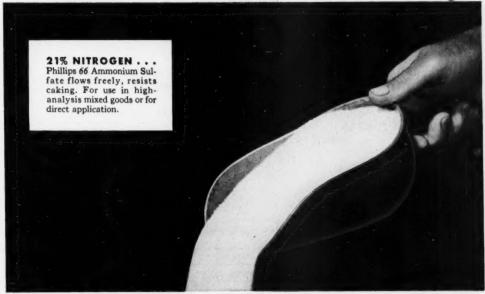


CORPORATION

Atlanta, Georgia

Lockland, Ohio

It's a Good Mixer!



Nitrogen is in great demand. Even Phillips tremendous capacity isn't equal to today's requirements. But we're making four different kinds of high-quality nitrogen material for mixers and farmers.

- 1. AMMONIUM NITRATE . . . Phillips 66 Ammonium Nitrate contains 33% N. Small, coated, uniform pellets flow freely and resist caking.
- NITROGEN SOLUTIONS . . . there are three Phillips 66 Nitrogen Solutions for use in the preparation of high-analysis fertilizers and the ammoniation of super-phosphate. These solutions keep handling costs low . . promote rapid, thorough curing.
- 3. ANHYDROUS AMMONIA . . . Phillips 66 Agricultural Ammonia contains 82% N. Convenient, economical source of nitrogen for fertilizers.
- 4. AMMONIUM SULFATE (see photograph and description above.)

For full information write our nearest district office.



PHILLIPS CHEMICAL COMPANY

A Subsidiary of Phillips Petroleum Company

FERTILIZER SALES DIVISION . BARTLESVILLE, OKLAHOMA

DISTRICT SALES OFFICES:

NORFOLK—610 Royster Bidg. • TAMPA—7 Terrace Office Bidg., 404 Marion St. • HOUSTON—604 City National Bank Bidg.

OMAHA—WOW Bidg. • AMARILLO—First National Bank Bidg. • PASADENA—16 North Marengo Ave. • BARTLESVILLE—Adams Bidg.

ASHCRAFT-WILKINSON CO.

Fertilizer



Oil Seed

Materials

Home Office: ATLANTA, GA. Cable Address **ASHCRAFT**

Meals

Offices: NORFOLK, VA., CHARLESTON, S. C. TAMPA, FLA., COLUMBUS, OHIO

Exclusive Distributors: DUVAL SULPHUR & POTASH COMPANY **AMMONIATES** FEED STUFFS **SULPHUR** INDUSTRIAL AND AGRICULTURAL CHEMICALS



Dependable for More Than Fifty Years

All Steel Self-Contained Fertilizer Mixing and Bagging Units

Batch Mixers — Dry Batching

Pan Mixers — Wet Mixing

Tailings Pulverizers - Swing Hammer and Cage Type

Vibrating Screens

Dust Weigh Hoppers Acid Weigh Scales

STEDMAN FOUNDRY & MACHINE COMPANY, INC.

General Office & Works; AURORA, INDIANA





- * phosphate for the manufacture of industrial chemicals
- * phosphate for the manufacture of complete fertilizers
- * natural ground rock phosphate for direct application to the soil

Phosphate mines and plants in Florida at Noralyn, Peace Valley, Achan, Mulberry; in Tennessee at Mt. Pleasant and Wales.



high grade phosphate

for industry and agriculture

phosphate division

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

General Offices: 20 North Wacker Drive, Chicago 6

1000 pounds of 10-10-10 plowed down nearly doubles corn and potato yields



for Leon Epler,

NORTHUMBERLAND, PA.

● Until 1948, Leon Epler of Northumberland, Pa., was getting corn yields of 40 to 50 bushels per acre by using approximately 250 pounds of row fertilizer. But that year he began plowing down 1000 pounds of 10-10-10 in addition to the row fertilizer. His yield jumped to 70-75 bushels per acre.

He climaxed this outstanding production in 1950 with a plot that yielded 122.1 bushels per acre in the Five Acre Corn Club contest sponsored by the Pennsylvania Crop Improvement Association. The special fertilizing program used on this plot included 10-10-10.

Plowing under 800-1000 pounds of 10-10-10 gave Mr. Epler equally outstanding results on potatoes. His average yield jumped from 300-350 bushels per acre to 500-550 bushels. Improved spraying and cultural methods also played a role in this increase.

Bigger yields for farmers mean better business for you

 On all types of crops, high-nitrogen complete fertilizers are paying for themselves over and over through higher quantity and better quality yields.

Every bumper crop produced by high-nitrogen fertilizers increases the demand for these products. And now is the time for you to cash in on this demand by putting heavy promotional effort behind the high-nitrogen fertilizers in your line.

When you use U·S·S Ammonium Sulphate in your mixed fertilizers, you'll find the selling job easier. Farmers know the name "United States Steel" stands for top quality. Many of them have used U·S·S Ammonium Sulphate as a straight-nitrogen material... they know it's dry and freerunning... they know it won't set up in storage and that it handles well in distributing equipment.

For complete details on U·S·S Ammonium Sulphate contact our nearest Coal Chemical Sales Office or write directly to United States Steel Company, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

U·S·S AMMONIUM SULPHATE

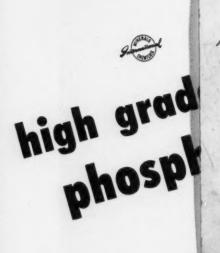


2-1429

UNITED STATES STEEL



PA(MISS



INTERNATIONAL MINERALS
& CHEMICAL CORPORATION

General Offices: 20 North Wacker Drive, Chicago 6

1000 pounds of 10-10-10 plowed down ato yields eon Epler,

NORTHUMBERLAND, PA.

8, Leon Epler of Northumberland, ting corn yields of 40 to 50 bushels using approximately 250 pounds of r. But that year he began plowing pounds of 10-10-10 in addition to tilizer. His yield jumped to 70-75 acre.

red this outstanding production in plot that yielded 122.1 bushels per Five Acre Corn Club contest spone Pennsylvania Crop Improvement The special fertilizing program plot included 10-10-10.

under 800-1000 pounds of 10-10-10 pler equally outstanding results on is average yield jumped from 300per acre to 500-550 bushels. Imaying and cultural methods also le in this increase.

rs for you

ow the name "United States p quality. Many of them have nium Sulphate as a straight. they know it's dry and free-now it won't set up in storage well in distributing equipment. etails on U·S·S Ammonium our nearest Coal Chemical ite directly to United States 5 William Penn Place, Pitts-vania.

ATE USS

2-1429

UNITED STATES STEEL

GES

SING



phosphate division

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

General Offices: 20 North Wacker Drive, Chicago 6

1000 pounds of 10-10-10 plowed down nearly doubles corn and potato yields



for Leon Epler,

NORTHUMBERLAND, PA.

● Until 1948, Leon Epler of Northumberland, Pa., was getting corn yields of 40 to 50 bushels per acre by using approximately 250 pounds of row fertilizer. But that year he began plowing down 1000 pounds of 10-10-10 in addition to the row fertilizer. His yield jumped to 70-75 bushels per acre.

He climaxed this outstanding production in 1950 with a plot that yielded 122.1 bushels per acre in the Five Acre Corn Club contest sponsored by the Pennsylvania Crop Improvement Association. The special fertilizing program used on this plot included 10-10-10.

Plowing under 800-1000 pounds of 10-10-10 gave Mr. Epler equally outstanding results on potatoes. His average yield jumped from 300-350 bushels per acre to 500-550 bushels. Improved spraying and cultural methods also played a role in this increase.

Bigger yields for farmers mean better business for you

 On all types of crops, high-nitrogen complete fertilizers are paying for themselves over and over through higher quantity and better quality yields.

Every bumper crop produced by high-nitrogen fertilizers increases the demand for these products. And now is the time for you to cash in on this demand by putting heavy promotional effort behind the high-nitrogen fertilizers in your line.

When you use U.S.S Ammonium Sulphate in your mixed fertilizers, you'll find the selling job easier. Farmers know the name "United States Steel" stands for top quality. Many of them have used U·S·S Ammonium Sulphate as a straight-nitrogen material... they know it's dry and free-running... they know it won't set up in storage and that it handles well in distributing equipment.

For complete details on U·S·S Ammonium Sulphate contact our nearest Coal Chemical Sales Office or write directly to United States Steel Company, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

U·S·S AMMONIUM SULPHATE



S-Y425

UNITED STATES STEEL

fertilizer distribution in South Carolina

By B. D. CLOANINGER**

Presented at the meeting of the South Carolina Plant Food Educational Society September 10, 1952

The fertilizer industry in South Carolina represents approximately a \$43,000,000.00 annual operation. There are 98 fertilizer manufacturing plants located in the state while there are 72 located in 15 other states doing business in South Carolina. Even though the expenditures for fertilizer are relatively large, the approximate return for each dollar spent for fertilizer is five dollars. The fertilizer industry and agricultural agencies have been and are continuing to work very closely together and are playing a most active part in the production of food to feed the increased population. The resulting co-operative, sound, progressive fertilizer program has caused a reduction in the number of grades manufactured and an increase in the total plant food content, thus streamlining the manufacture of fertilizer and reducing the cost per unit of plant food to the farmer. During the past fiscal year only 26 grades of fertilizer were manufactured and 6 of these represented 92.41% of the total tonnage.

Fertilizer distribution in South Carolina has exceeded the expectations of even the most optimistic member of the fertilizer industry, agricultural agency or farmer. For the fiscal year just ended. June 30th, the fertilizer tonnage, according to the tax tag sales was 1,002,068 tons; incidentally this is the highest tonnage since 1920, at which time the tonnage was 1,106,941. Even though the total tonnage for 1920 was higher, the total plant food for the period just ended is much greater. The average total plant food content for 1920 was 13.9% as compared to 20.97% for the fiscal year just ended. A list of the average analyses and total plant food content of complete fertilizers used in South Carolina for the periods shown follows below:

As another means of reducing the cost of fertilizer and, in addition, rendering a service to farmers, especially those with limited equip-

ment, some fertilizer manufacturers are distributing fertilizer and fertilizer materials in bulk directly to farmers. In spite of the worthwhile progress made there are still numerous problems pertaining to fertilizer manufacture and distribution that will require continued co-operation and research of the highest calibre to solve. The principal means of distributing has been the five-tons capacity spreader trucks either owned by the fertilizer manufacturer or by a custom spreader. This service has been used principally for pasture, truck and orchard fertilization. Even though the bulk spreader service is somewhat new, it is gaining in popularity. According to bulk tax tag sales, the following tonnage has been used during the fiscal years: 1949-50-4,600 tons; 1950-51 --13,767 tons; 1951-52-22,380 tons.

Below is a list by grades of fertilizer and fertilizer materials distributed in South Carolina for the fiscal year ending June 30, 1952.

0-12-12	2,230
0-14-7	161
3-9-6	2
3.9.9	1,746
3-12-6	412
3-12-12	4,822
4-8-8	6
4-10-6	366
4-8-12	28
4-12-12	17
5-10-5	210
6-8-6	135
8-8-8	101
14-0-14	22
6-12-12	849
0-14-14	26
3-12-9	49
	11,182
Ammo, Nit. Compound-20.5%	29
Nitrate of Soda	5
Sulphate of Ammonia	13
Basic Slag	110
Superphosphate—18%	3,953
Superphosphate 19-20%	270
Muriate of Potash—50%	52
Muriate of Potash-60%	204
Rock Phosphate	359
	4,995
Total Tons Mixed Fertilizer	11,182
Total Tons Materials	4,995
Grand Total Tons *Now illegal in S. C.)	16,177

**Head, Department of Fertilizer Inspection and Analysis, Clemson Agricultural College.

AVERAGE S. C. ANALYSES

	N	P ₂ O ₃	K ₂ O	Total of Plan
Year	Percent	Percent	Percent	Food -Percent
1888-89	1.81	8.30	1.34	11.45
1893-94	2.08	9.27	1.79	13.14
1898-99	2.24	9.32	2.21	13.77
1909-04	2.46	9.12	2.90	14.48
1908-09	2.49	9.16	3.08	14.73
1913-14	2.83	8.79	3.75	15.37
1918-19	2.43	8.82	2.23	13.48
1923-24	2.97	9.06	3.52	15.55
1928-29	3.27	9.29	4.03	16.59
1933-34	2.92	8.75	3.76	15.43
1938-39	3.10	8.36	4.57	16.03
1943-44	3.62	9.55	5.70	18.87
1944-45	3.82	9.64	6.65	20.11
1945-46	3.80	9.71	6.54	20.05
1946-47	3.96	9.86	6.13	19.95
1947-48	4.01	9.86	6.11	19.98
1948-49	3.88	9.69	6.50	20.07
1949-50	3.73	9.68	6.86	20.27
1950-51	3.64	9.72	7.31	20.67
1951-52	3.62	9.70	7.65	20.97

PROGRAM

South Carolina Plant Food Educational Society

Wednesday, September 10, 1952 2:30 P.M.

Call to Order—H. B. Davis, President.

Welcome—Dr. R. F. Poole, President, Clemson College.

Response—A. D. Kincaid, Mgr. Southern Cotton Oil Co., Fertilizer Div., Columbia District.

"Importance of the Society's Program"—H. A. Woodle, Leader, Agronomy Extension Work.

"Fertilizer Distribution in South Carolina"—B. D. Cloaninger, Head, Fertilizer Inspection & Analysis, Clemson College, S. C.

Introduction of Speaker—Dr. H. P. Cooper, Director, S. C. Experiment Station, Clemson College, S. C.

"Nutrition by Soil Fertility"— Dr. Wm. A. Albrecht, Chairman Dept. Soils, U. of Missouri.

Open Business Session; Election of Officers.

ANNUAL BANQUET (Saber Room) 7:30 P.M.

Toastmaster—Clair P. Guess, Jr., Assn. of S. C. Soil Conservation Dist. Supervisors.

Invocation—S. C. Stribling, Agricultural Editor, Clemson College, S. C.

Introduction of Guests.

"The Art of Conservation"—Vernon Grant, "Pinetuck," Rock Hill, S. C.

SOUTH CAROLINA PLANT FOOD EDUCATIONAL SOCIETY

Commercial Fertilizer wants to back up heartily the invitation to all interested in agriculture's future which has been issued by Herbert Davis, president of the South Carolina Plant Food Educational Society. This group meets September 10th at The Clemson House, a delightful new hotel in Clemson, S. C.

The Plant Food Educational Society idea is one which is spreading across the nation, and the South Carolina group pioneered the idea. This is, as President Davis has expressed it, an organization of about 200 members, dedicated to better farming in South Carolina.

In many ways it supplies educational material to the farmers its members reach—and forms an active channel through which agronomical data moves down from the University level, and back up again from the soil.

We have reported here the Corn Contest activities of this group, and the Georgia counterpart, which itself is thriving and very active contribution to the improvement of agriculture. As a publication devoted to the good of the fertilizer industry, and its allied fields, we know that such groups are vital, and are glad to see them beginning to form in the West. We will continue to publish all the information we can find on the subject, and hope our readers will continue to keep us informed



HUDSON PULP & PAPER CORPORATION Dept. 151 505 Park Avenue, New York 22, N. Y.

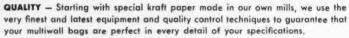
those who want the best set their



sights on

EQUITABLE MULTIWALL BAGS

Every month, the list of fertilizer packers who have switched to Equitable keeps growing. Why? Because there's a BIG difference when you deal with this outstanding leader in the paper bag field! Here are just a few of the "plus values" that will add up to greater economy, efficiency and satisfaction in your packing operation:



PRINTING — Equitable's modern four-color printing process equipment prints sharp, bright colors with amazing fidelity and careful registration. The services of our design artists are available without cost or obligation.

PERSONAL SERVICE — Equitable is big in terms of modern machinery but not too big to give your individual job personalized executive attention at every step of production.

DELIVERY — You want the right bag when you want it. And with Equitable, you are always assured of prompt, dependable delivery!

SPECIFICATIONS — Equitable Multiwall Bags are available in any combination of papers you require -2 to 6 plies — plain or printed in 1 to 4 colors.

We'll be glad to rush you quotations. Let us know your requirements...





45-50 VAN DAM STREET

LONG ISLAND CITY 1, N. Y.

PAPER MILLS AND SOUTHERN BAG PLANT: ORANGE, TEXAS



This is good news in agriculture and in industry. Increased availability of vital plant nutrients in the form of soluble inorganic salts for fertilizer solutions can mean new products and new markets for fertilizer manufacturers.

New emphasis is being placed upon WATER-SOLUBLE FERTILIZERS. Growers and manufacturers are developing new methods...new applications of high-analysis soluble plant foods which combine NTROGEN... PHOSPHORUS, POTASH and, in many cases, weed killers and insecticides, too.

MONSANTO, to help meet the increasing demands for plant foods, has increased quantities of four basic, soluble fertilizer chemicals... MONO AMMONIUM PHOSPHATE... MONO POTASSIUM PHOSPHATE... PHOSPHORIC ACID 75.0%.

New uses for WATER-SOLUBLE FERTILIZERS are proving profitable for growers... profitable for FERTILIZER MAN-UFACTURERS. Perhaps these products will fit into your production planning. Contact any District Sales Office, or write MONSANTO CHEMICAL COMPANY, Phosphate Division, 1700-C South Second Street, St. Louis 4, Mo. DISTRICT SALES OFFICES: Birmingham, Boston, Charlotte, Chicago, Cincincati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto Canada Limited, Montreal.

MONSANTO PLANT NUTRIENT CHEMICALS						
	N	P20s	K20			
Mono Potassium Phosphate (Crystals)	-0-	51.6%	34.2%			
Di Ammonium Phosphate (Crystals)	21.0%	53.85%	-0-			
Mono Ammonium Phosphate (Crystals)	12.2%	61.61%	-0-			
Phosphoric Acid (75.0%) (Liquid)	-0-	54.5%	-0-			

FREEPORT SULPHUR COMPANY'S PRESENTATION OF

ESTIMATED NEW *FREE WORLD* SULPHUR PRODUCTION -- 1952-55*

(Long Tons of Sulphur)

Company	Location	New Capac 1952	ity To Be Add	led During 1 1964	lear Of: 1955	New	Total Capacity End 1985
RIMSTONE							
FROM FRASCH PROCESS							
Freeport Sulphur Co.	Bay Ste. Elaine, Louisiana	100,000		-	*		100,000
Freeport Sulphur Co.	Carden Island Bay Invisions		500,000	-	-		500,000
Freeport Sulphur Co.	Hash Dome. Yeves		-	70,000	-		70,000
Texas Gulf Sulphur Co.	Moss Bluff Towns	300.000		-			300,000
Texas Gulf Sulphur Co.	Spindleton Toron	800,000		-	-		300,000
Mexican Gulf Sulphur Co.	Nash Dome, Texas Hoss Bluff, Texas Spindletop, Texas Tehuantepec, Mexico	300,000	200,000				400,000
		800.000	700,000	70,000		1	
		600,000	700,000	70,000	-		,570,000
FROM OTHER MATIVE DEPO Sominar, S. A.	S I T.S El Sosenado, Argentina		10,000				
		12,000	10,000		-		10,000
Industries Purace, S. A.	Popayan, Columbia Tixan, Ecuador Italy Japan	12,000	15,000	-	-		12,000
Chemical Plants Corp.	Tixan, Ecuador	10,000		-	-		25,000
Sicilian Mine Operators	Italy		50,000	-	50,000		100,000
Japanese Mine Operators		45,000	55,000		-		100,000
Guakcama Nine	Cerritos, S.L.P., Nexico	6,000					6,000
Eti Bank (Government)	Keciberlu, Turkey		7,000 40,000	-	-		7,000
Anaconda Copper Co.	lavo County California		80,000	-	-		40,000
Plack Back Basset Misses In Co.	inyo county, carritornia	-	3,000	-	-		
Black Rock Desert Minerals Co.	Winnemucca, Mevada			-			3,000
Chemical Corp. of America	Sulphurdale, Utah	10,000					10,000
Anaconda Copper Co. Black Rock Desert Minerals Co. Chemical Corp. of America Continental Sulphur & Phos. Co.	Cerritoe, S.L.P., Mexico Keciberlu, Turkey Inyo County, California Winnemucca, Nevada Sulphurdale, Utah Cody, Myoming Cody, Myoming		:	10,000			10,000
Wyoming Gulf Sulphur Co.		8,000		-			8,000
Total Other Mative		91,000	180,000	10,000	50,000		331,000
FROM SOUR MATURAL GAS							
Royalite Oil Co.	Turner Valley, Alta., Canada	10,000	-	-	-		10,000
Shell Oil Co.	Turner Valley, Alta., Canada Jumping Pound, Alta., Canada	10,000			-		10,000
Petroleos Mexicanos	Poza Rica, Mexico	10,000					10,000
General Petroleum Corp.	Poza Rica, Mexico Worland, Wyoming			-	35,000		35,000
Gulf Oil Co.	Maddell Towns	7,000		-	95,000		7,000
Imperial Sulphur & Acid Co.	Farmington, New Mexico		21,000		-		7,000
	rarmington, new mexico		21,000	-			21,000
Hathieson Chemical Co.	Stamps, Arkansas	21,000	*		-		21,000
Odessa-Sid Richardson	Occass, texas	7,000		-	-		7,000
Phillips Chemical Co.	Grane, Texas Goldsmith, Texas	17,500		:	-		17,500
Phillips Chemical Co. Phillips Chemical Co.	Goldsnith, Texas	94,000 35,000		-	-		44,000
Phillips Chemical Co.	Eunice, New Mexico	35,000		_			35,000
Sid Richardson Carbon Co.	Konstana Torres		-		_		
318 KICHARDSON CAPBON CO.	keystone, lexas	8,700		-	-		8,700
Seaboard Oil Co.	Keystone, Texas Silvertip, Wyoming	28,000	-	-			28,000
Stanolind Oil & Gas Co.	Slaughter, Texas	14,000		-	-		14,000
Seaboard Oil Co. Stanolind Oil & Gas Co. Stanolind Oil & Gas Co.	Silvertip, Wyoming Slaughter, Texas Worth Cowden, Texas Monument, New Wexico	7,000		-	-		7,000
Warren Petroleum Cory.	Monument, New Hexico		5,200	-	*		5,200
Total Sour Matural Gas		219,200	26,200		35,000		280,400
FROM REFINERY GASES							
Yacimientos Petrolifeios Fiscales	Buenos Aires, Argentina	-		10,000	-		10,000
Petroleos Mexicanos	Atzcapotzalco, Mexico		10,000	-	-		10,000
Swedish Shale Oil Co.	Kvarntorp, Sweden	14,000	-				14,000
Esso Petroleum Co., Ltd.	Fawley, England		12,000		-		12,000
Esso Petroleum Co., Lto.	rawley, England	-			-		
Shell Oil Co., Ltd.	anelinaven, England		8,000	:	-		8,000
Shell Oil Co., Ltd.	Shellhaven, England Stanlow, England	10,000	:	-			10,000
Trinidad Leaseholds, Ltd.	Es sizemen	2,000			-		6,000
Atlantic Refining Co.	Atreko, Texas		5,300	-	-		5,300
Cities Service Refining Corp.	Lake Charles, Louisiana	4,200			~		4,200
Consolidated Chem. Ind., Inc.	Saton Rouge, Louisiana	14,000			-		14,000
Davison Chemical Co.	Baltimore, Haryland	17,000	9.600				8,500
Davison Chemical Co.	dartimore, marytane	:	0,500		-		
	Lindon, New Jersey Port Arthur, Texas		21,000	-			21,000
Bulf Refining Co.	Fort Arthur, Texas	21,000		:			21,000
Hancock Chamical Co.	Los Angeles, California		-	-	-		17,500
Shell Chemical Co.	Houston, Texas	17,500		-	-		17,500
Sinclair Refining Co.	Houston, Texas Harcus Hook, Pennsylvania	7.000			-		7,00
Standard Gil Co. (Ind.)	Whiting Indiana	7,000 19,200					19,200
The Texas Co.	Whiting, Indiana Port Arthur, Texas	8,700	-		-		8,70
Union Oil Co.	Wilmington, California	22,700	-	-	-		22,700
Total Refinery Gases		157,800	64,800	14,000			236,600
FROM PYRITES							
Horanda Hines, Ltd.	Welland, Ont., Canada	*	20,000	-	-		20,00
FROM SMELTER GASES Cia. Real de Austuriana	Biltmo, Spain		10,000	-			10,00

[&]quot;Estimates based on published information and trade sources.

FREEPORT SULPHUR COMPANY'S PRESENTATION OF

ESTIMATED NEW "FREE WORLD" SULPHUR PRODUCTION -- 1952-55 (CONT.)"

(Long Tons of Sulphur Equivalent)

Company	Location	New Capa 1952	city To Be Ad 1953	ded During 1954	Year Of: 1965	Total Capacity End 195
THER SULPHUR						
IN PYRITES						
Four-Company Combine	Nairne, Australia	-		30,000	-	30,000
Mt. Lyell Mining & Rwy. Co.	Tasmania, Australia			90,000	12,000	12,000
S.A. Reunidas F. Materazzo	Sao Paulo, Brazil			6,000	12,000	6,000
Columbia Cellulose Co.	Prince Rupert, B.C., Canada	14,000		0,000		14,000
Consolidated Mining & Smelting Co.	Kimberly, B.C., Canada	14,000		30,000	-	30,000
Consolidated Paper Corp.	Grand-Here, Quebec, Canada	4,000	-			4,000
Noranda Mines, Ltd.	Moranda, Oyebec, Canada	*1000	35,000		-	35,000
Normetal Mining Corp.	Dupuy, Quebec, Canada	6,000	33,000	-		6,00
Electro Kjemisk	Skovoras, Horway	75,000	-	-		75,00
National Power Corp.	Rappe Island, Philippines	75,000	-	-	10,000	10,00
Rio Tinto and Tharsis	Huelva Province, Spain				735,000	735,00
Board of Trade Project	Rudtjeback, Vb., Sweden		50,000	-	50,000	100,00
West Rand Consol. Mines, Ltd.	Umbogintwini, South Africa		18,000		30,000	18,00
Bethishem Steel Co.	Berks County, Pennsylvania		28,000			28,00
Brown CoVermont Copper Co.	Berlin, New Hampshire	6,000	20,000			6,00
Total Pyrites		. 105,000	131,000	66,000	807,000	 1,109,00
IN REFINERY GASES						
Consolidated Chemical Industries	Baytown, Texas		17,500			17.50
Stauffer Chemical Co.	Compton, California		8,700			8.70
Tide Water - Monsanto Chemical	Avon, California	12,000		-	*	12,0
Total Refinery Gases		12,000	26,200	,7	-	 38,20
IN SHELTER GASES						
Bleiberg Mining Union, Ltd.	Carynthia, Austria	5,000				5.00
Union Miniere - Metalkat	The Katanga, Belgian Congo	-	-	5,000	-	5.00
Aluminum Co. of Canada, Ltd.	Arvida, Quebec, Canada	15,000	-		-	15.0
Consolidated Industries, Ltd.	Copper Cliff, Ont., Canada	45,000				45.0
Sherritt-Gordon Mines, Ltd.	Ft. Saskatchewan, Alta., Canada		-	15,000		15.0
American Smelting & Refining Co.	San Luis Potosi, Mexico	3,000		- 9		3.0
American Smelting & Refining Co.	Amarillo, Texas		12,500	- 2		12.5
American Smelting & Refining Co.	Tacoma, Washington	10,000	-			10.0
American Zinc Co. of Illinois	Fairmount City, Illinois	3,000				3,0
American Zinc Co. of Illinois	Dumas, Texas	2,000		22,000		22.0
Bunker Hill & Sullivan Min. Co.	Kellogg, Idaho	30,000	-	22,000		30.0
Garfield Chemical & Mfg. Co.	Garfield, Utah	-	25,000	-		25,0
Total Smelter Gases		111,000	37,500	42,000	-	 190,50
IN SULPHATE WINERALS						
Austrian Witrogen Works	Linz, Austria	-	5,000	20,000		25,0
1. G. Farbenindustrie	Wulfen, West Germany		-	-	30,000	30,0
Government Fertilizer Works	Sindri, India	20,000	50,000			70.0
Government Fertilizer Project	Mari Indus, Pakistan			12,000		12.0
Imperial Chem. Ind., Ltd.	Billingham, England		25,000			25,0
Solway Chemicals Ltd.	Whitehaven, England	-		23,000		23.0
United Sulphuric Acid Corp.	Herseyside, England		70,000		-	70,0
Total Sulphate Minerals		20,000	150,000	55,000	30,000	 256,0
			344,700 1,001,000	163,000 94,000		
			1.345,700	257,000		4,040,7

SUMMARY

	_			
	Estimated Total 1981	Estimate	d New Capacity 195	2-1965
	Preduction	Brimetons	3 lphur	Total
United States	6,180,000	1,858,000	74,700	2.032.700
Canada	329,000	90,000	164,000	204,000
Mexice	52,000	226,000	3,000	229,000
Total North America	6,561,000	2,124,000	341,700	2,465,700
Europe	3,730,000	154,000	1,088,000	1,242,000
Asia	1,200,000	107,000	92,000	199,000
South America	56,000	63,000	6,000	69,000
Oceania	105,000	*	42,000	42,000
Africa .	44,000		23,000	23,000
Total Other Areas	5,135,000	324,000	1,251,000	1,575,000
"Free World" Grand Total	11,696,000	2,448,000	1,592,700	4,040,700

^{*}Estimates based on published information and trade sources. July 1952



MANY years of experience in the ferti-lizer industry have given the Harte Company valuable "know-how" about the development and application of the fertilizer processes. Extensive study, research and on-the-job training have made the chemical and design engineers of the Harte Company specialists in the fertilizer industry. Specialists in visualization and application.

This diversified experience and knowledge of Harte engineers is available to you in planning the design and construction of a raw materials processing plant or a mixing plant. Whatever your fertilizer plant needs the Harte organization can handle your complete job or any part, from original plans to finished operating plant, efficiently and economically.

In fertilizer plant planning there's no substitute for experience. Why not call in a Harte representative for a discussion of your plans? There is no obligation.

Harte Engineers Are Specialists in:

- Single Superphosphate Plants
 Phosphoric Acid
 Ammonium Sulphate Plants
 Granulation Plants
- Ammonium Sulphate Plants Granulation Plants
 Storage Buildings Fertilizer Mixing Plants
- Nitrophosphate Plants • Triple Superphosphate
- Sulphuric Acid Warehouses

ENGINEERS

CONSTRUCTION MANAGERS

John J. Harte Co.

284 Techwood Drive, N.W., ATLANTA . NEW YORK . HOUSTON . MEXICO, D. F. What it takes in the BIG LEAGUE...

CONTROL!

That's what you get with

AQUAFIL

THE MODERN DIATOMACEOUS EARTH CONDITIONER FOR ALL MIXED FERTILIZERS

It gives you a better product that is uniform bag by bag...at LESS COST!

TOMBSTONING now doomed with Aquafil as your conditioning agent. Two years research and scientific pilot tests proved that Aquafil is 4 times as effective as old fashioned conditioners. This means a more uniform, a more concentrated product... at less cost. Using smaller portions of Aquafil also brings you savings in handling labor. Aquafil is the best modern conditioner for all mixed fertilizers, for it gives you a better product that is uniform bag by bag... AT LESS COST!

PRODUCTION MANAGERS
TESTED IT ... CALL IT THE

PRODUCT STABILIZER

At last you can now have complete control of your product. Each bag is the same... and there are no more nightmares about tombstoning.



GET ON THE BALL NOW SEND COUPON FOR PROFITS

AQUAFIL COMPANY
96 B Avenue N.E., Cedar Rapids, Iowa

Please send me, at once, your new folder telling how I can up profits by using Aquafil in my mixed fertilizer operations.

Name

City----- State-----





Chase Multiwalls are "Built to TAKE it!" They're the work horse of packaging! They are easy to handle, stack, and palletize . . . easy to open and to empty. Furthermore, Chase Multiwall Bags are economical and sharply reproduce your brand name. Your Chase salesman is a thoroughly informed packaging expert. Check with him on Chase Multiwalls for the better packaging of your product.

Percheron Horses are famous throughout Europe for great strength and symmetry of line.

Multiwall Bags for FERTILIZER

for Better Bags... Better Buy Chase!

LHASE BAG CO. GENERAL SALES OFFICES: 309 W. JACKSON BLVD., CHICAGO 6, ILL.

BOISE + DALLAS + TOLEDO + DENVER + DETROIT + MEMPHIS + BUFFALO + ST. LOUIS + NEW YORK + CLEVELAND + MILWAUKEE
PITTSBURGH + KANSAS CITY + LOS ANGELES + MINNEAPOLIS + GOSHEN, IND. + PMILADELPHIA + NEW ORLEANS + ORLANDO, PLA + SALT LAKE CITY
OKLAHOMA CITY + PORTLAND, ORE. + REIDSVILLE, N. C. + HARLINGEN, TEXAS + CHAGRIN FALLS, O. + WORCESTER, MASS. + CROSSETT, ARK. + SAN FRANCISCO

Abstracts OF PAPERS PRESENTED S. F. Thornton, Chairman IN ATLANTIC CITY SEPT. 14-19

S. F. Thornton, Chairman J. D. Romaine, Secretary

WEDNESDAY AFTERNOON

Symposium on Potential of Fertilizer Use for More Efficent Crop Production

F. E. Bear, Presiding

1. INTRODUCTORY REMARKS. F. E. Bear.

2. FERTILIZER EXPENDITURES IN RELATION TO INCOME IN VARIOUS STATES. A. L. Mehring, J. R. Adams, and Gae A. Bennett, Division of Fertilizer and Agricultural Lime, Bureau of Plant Industry, Soils, and Agricultural Engineering, U. S. Department of Agriculture, Beltsville, Md.

Farmers on the average during the past 40 years have spent close to 5 cents out of every dollar of income from crops and government payments for fertilizer. During all the years from 1910 to 1950 the highest average for any year was 6.7 cents in 1914 and the lowest was 3.1 cents in 1921. Crop income increased from \$3 billion in 1912 to \$13 billion in 1950 and farmers increased their expenditures for fertilizers from \$153,000,000 to \$700,000,000 in the same period. In 1912 farmers use 157,000 tons of nitrogen, 521,000 tons of PaOs, and 222,000 tons of KaO. In 1950 they consumed 1,126,000 tons of nitrogen, 2,072,000 tons of P.O. and 1.215.000 tons of K.O. The average cost of a ton of plant food, therefore, declined from \$170 in 1912 to \$159 in 1950.

In the southeast, farmers spend relatively less of their income than formerly for fertilizer. For example, South Carolina planters spent on the average 20.27 cents out of each dollar of income from crops and government payments in the 15 years from 1925 to 1939, inclusive, but only an average of 16.29 cents in the 11-year period 1940 to 1950. Farmers of Massachusetts, Pennsylvania, Ohio, and Indiana have continued to spend about the same proportion of their income, although 1950 expenditures

DIVISION OF FERTILIZER
AND SOIL CHEMISTRY
AMERICAN CHEMICAL SOCIETY

were a little higher than the average for the entire period. The farmers of California and Texas are now spending more than twice as large a proportion of their income for fertilizer as prewar. The greatest increases occurred in the north central states, where the average expenditure in the 15 years before World War II was only a few tenths of a cent out of each dollar. In 1950, the average for Minnesota, Iowa, Missouri, and Kansas were 3.02, 3.15, 6.62, and 2.01 cents respectively.



3. POTENTIAL OF FERTILIZER USE FOR MORE EFFICIENT CROP PRODUCTION AS APPLIED TO THE NORTHEASTERN REGION. Mack Drake, University of Massachusetts, Amburst, Mass.

Data from hundreds of fertilizer experiments have been assembled through the cooperative efforts of state and federal soil scientists and soon will be published. These data show the possibilities of much larger crop yields and greater efficiency in crop production by the proper use of plant nutrients. However, the supply of fertilizer materials, especially phosphorus, appears inadequate to approach those tremendous crop yield potentials.

More effective use of our current supplies of fertilizer materials will be required in the future for more efficient crop production. This will require increased research effort for fundamental knowledge of (1) factors affecting availability of fertilizer nutrients in the soil and (2) how plants feed on native, residual, and applied mineral nutrients. While fundamental research in soil-plant relationships requires a vast amount of planning and effort, once fundamental truths have been uncovered, their application can produce such far-reaching effects as "the 2 pounds of nitrogen for one bushel of corn" relationship.

Historically and current nitrogen, P2O5, and K2O usage per acre is much higher in the northeastern region than in any of the other regions. Experimental crop yields responses produced by nitrogen, P2Os, and K2O fully justify increasing the current acre applications for all except a few crops. Fundamental information is essential to understanding why high annual applications of fertilizer are so necessary in the Northeast. When soluble phosphate fertilizers are applied to soils of the humid region, active iron and aluminum in the soil react to form relatively insoluble "fixed" phosphates. Soils of the northeastern region are much higher in active iron and aluminum than soils of the other regions and thus much larger applications of phosphate fertilizers are required to supply a given level of available phosphorus to plants in this area. Increased efficiency in the use of phosphorus can be attained by proper use of manure and other organic matter which both reduces phosphorus fixation and increases the availability of fixed phosphates by inactivating the iron and aluminum in the soil by formation of stable Werner type complexions.

Many soils of the northeastern region are low in cation exchange capacity and in potassium minerals. Soils of this Northeast do not receive an annual deposit of potassium-bearing loses as do many areas in the Midwest, so large annual applications of potash fertilizers are needed. Factors affecting more efficient crop production by potassium and nitrogen are discussed. Forage crops offer the greatest potential use for increased applications of fertilizers in the northeastern region.



 POTENTIAL OF FERTILIZER USE FOR MORE EFFICIENT CROP PRODUCTION AS APPLIED TO THE MIDDLE WEST. K. C. Berger, University of Wisconsin, Madison 6, Wis.

The present status of fertilizer use and its relation to crop yields in the north central region were discussed in a report by the Fertilizer Work Group of the National Soil and Fertilizer Research Committee in July 1951. The report shows that present yields of the most important crops are from one half to two thirds of the yield potential with full fertilization. For example, corn yields on the average 44 bushels, which is only two thirds of the potential with full fertilization. Yields are especially low in the western part of the cegion where rainfall is often limited, but even here only 40% of the yield potential is reached under presentday management. With proper fertilization, it is estimated that in the heart of the Corn Belt state, average yields would reach 75 to 80 bushels per acre. With full fertilization of corn, yields could be increased approximately 800,000,000 bushels in this region without increasing acre-

At present in the region, wheat is yielding one half of its potential with full soil fertilization. With proper application of nitrogen, phosphate, and potash, fertilizer yields of wheat could be increased over 600,000,000 bushels annually.

Oats yields throughout the region have been low, averaging 35 bushels per acre. This is somewhat between one half and two thirds of the potential of this crop. With proper fertilization, yields could be increased over 700,000,000 bushels on the same acreage at present.

Hay yields throughout the area are very low, and hay as a general rule is producing less of its potential than any of the other major crops. Present yields averaged above 1.5 tons per acre. It is estimated that those yields could be increased to slightly over 3 tons per acre, with some states having as an average yield as much as 4 tons. This would mean the production of about 50,-000,000 additional tons of hay on the same acreage as present. The main limiting factors for the production of hav are potassium and lime, with many acres also needing phosphate.



5. POTENTIAL OF FERTILIZER USE FOR MORE EFFICIENT CROP PRODUCTION AS APPLIED TO THE HUMID SOUTH. James A. Naftel, Pacific Coast Borax Co., Auburn, Ala.

For agriculture to keep pace with other segments of our economy, it becomes increasingly important that all controlable factors in crop production be considered from the standpoint of efficiency. The use of adequate and proper fertilizers to attain the highest possible efficiency is the point discussed here.

As an example of greater efficiency in crop production through the use of adequate fertilizers in the humid South is the sharp increase in corn production in North Carolina brought about in recent years through more adequate fertilization, as well as other necessary production factors.

Grassland farming as now being practiced by better farmers offers perhaps the most striking example of how adequate fertilization and rotation of combinations of deep-rooted legumes and grasses is bringing about more efficient crop production as well as more total production. A specific instance is where the oat yield of an old worn-out cotton farm was approximately 30 bushels per acre until this crop followed a 4year alfalfa crop that had received annual application or approximately 1000 pounds per acre of high grade complete fertilizer containing trace elements. The first two crops of oats following the alfalfa were 80 and 95 bushels, respectively. Approximately 3-fold increases in yield resulted without additional overhead, obviously a better chance for profit through greater efficiency. Perhaps this is an answer to the increasing concern over the future requirement of much greater agricultural production on practically the same acreage.



6. POTENTIALS OF FERTILIZER USE FOR MORE EFFICIENT CROP PRODUCTION AS APPLIED TO THE WESTERN STATES. John P. Conrad, California Agricultural Experiment Station, Davis, Calif.

Historically growers of tree and vegetable crops with their high-peracre returns have applied adequate to even overly generous amounts of fertilizers if reasonable responses were to be secured, or even only anticipated. As a result, the use of nitrogen has become rather widespread, while experimentation has demonstrated many local areas, each where one or more of the following elements give responses: phosphorus, potassium, sulfur, iron, manganese, copper, and zinc.

Growers of field crops depended largely on the original fertility of the soil. As dry-farmed grain yields progressively declined, intervening pasture and/or fallow for one or more years was used. The nitrogen supply was helped where planted or volunteering forage legumes were grown. The cost of nitrogen fertilization was considered prohibitive unless responses were large.

Under irrigation, alfalfa and other legumes in the rotation were depended on to maintain the nitrogen supply, application of phosphorus, potassium, sulfur, boron, and or other nutrients for the legumes being made locally as deemed necessary.

The bringing of more land under irrigation and the great economic changes attending World War II with the marked increase in the prices of agricultural commodities in contrast to the relatively smaller

increases in the cost of fertilizer have led to a much greater use of these materials.

If future changes in economic conditions are not too great, we may look forward to a small but gradual-

ly increasing use of added plant nutrients on horticultural crops as the acreage is increased and as virgin fertility declines. Much more is known of the deficiencies of our soils for the growth of these crops.

THURSDAY MORNING

Fertilizer Technology S. F. Thornton, Presiding

7. CHEMICAL AND PHYSICAL PROPERTIES OF AMMONIATED SUPERPHOSPHATE. F. L. Turbett and J. G. MacArthur, Spencer Chemical Co., Pittsburg. Kan.

The effect of ammoniating solutions on the condition of mixed fertilizers has long been a subject of conjecture, and little systemized study has been reported. In this paper, attempts have been made definitely to assign responsibilities for certain physical characteristics of the mixed goods. A method for evaluating caking tendencies is outlined and laboratory and field work are correlated, showing possible steps which may be taken to improve condition of mixed goods through the use of ammoniating solutions.



8. PREVENTION OF REVISION OF P:O, IN CALCIUM PHOSPHATE AND ITS APPLICATION TO THE MANUFACTURE OF FERTILIZERS IN AN ALKALINE MEDIUM. Louis E. Andres, Potasse & Engrais Chimiques, Paris, France.

When increasing amounts of ammonia are added to the product obtained by the action of nitric acid on rock phosphate, water-insoluble calcium phosphates are precipitated. The first fractions precipitated are soluble in ammonium citrate and they correspond to bicalcium phosphate. Additional amounts render the P_2O_3 insoluble in ammonium citrate. Under industrial conditions, the addition of ammonium has to be stopped before pH 3.4 is reached, and the slurry is acid.

It is possible to keep the calcium phosphate entirely soluble in ammonium citrate until pH 9.5 is reached in the slurry, if small amounts of a magnesium salt are added to the nitrate acid attacking the phosphate rock. Aluminum, manganese, and nickel salts have the same effect. It is thus possible to ammoniate superphosphate up to pH 9.5 without reversion of PrOs.

In this process it is possible by introducing carbon dioxide to eliminate the calcium nitrate formed by the action of nitric acid on phosphate rock, as the high pH makes possible the formation of calcium carbonate when the carbon dioxide is introduced into the slurry. All the calcium nitrate is transformed into calcium carbonate and ammonium nitrate.



9. SUPERPHOSPHATES BY ACIDULATION OF ROCK PHOSPHATE WITH MIXTURES OF SULFURIC AND PHOSPHORIC ACIDS AND WITH PHOSPHORIC ACID ALONE. L. D. Yates and F. T. Nielsson, Tennessee Valley Authority, Wilson Dam, Ala., and E. J. Fox and R. M. Magness, U. S. Department of Agriculture, Beltsville, Md.

Over a period of years there has been considerable interest in the acidulation of rock phosphate with mixtures of sulfuric and phosphoric acids and with phosphoric acid alone in ordinary superphosphate equipment. The higher grades of superphosphate thus obtained are needed in the formulation of high-analysis mixed fertilizers, for which there is an increasing demand. The use of phosphoric acid, either with or without sulfuric acid, in manufacturing facilities designed for sulfuric acid treatment was re-emphasized by the Atomic Energy Commission's recent proposal to increase the production of phosphoric acid for uranium recovery. At the request of the Atomic Energy Commission, a study of the production of superphosphates con-

taining 28, 33 and 45% available P_sO_s was undertaken cooperatively by the U. S. Department of Agriculture and TVA. The work is still in progress.

In small-scale experiments 12pound batches of Florida land pebble (88%-100 and 57%-200 mesh) were acidulated in a change-can mixer at various temperatures and acid concentrations. The conversion of the rock P2Oa to available forms during a 24-hour denning period varied from 95% for ordinary superphosphate to 85% for triple superphosphate. The period of fluidity in the acidulate made with mixed acids was greater than with single acids. Limited reaction during the initial stage, indicated by longer periods of fluidity, had little or no effect upon the extent of reaction 24 hours after mixing.

Results of pilot-plant experiments with a 1-ton pan mixer and a 1-ton mechanical den indicated that the compositions and temperatures of acidulants shown in the following tabulation would be satisfactory for use in the production of superphosphates containing 28, 33, and 45% available P_2O_5 in ordinary superphosphate mixing and denning equipment.

Grade of		A	cidulant	
Product, % Available P2Os	H ₂ PO ₄	Conposi- tion, % H ₂ SO ₄	H:O	Tempera- ture °F.
28	22.2	44.4	30.4	130-150
33	37	37	21	130
45	72		22	130

Phosphoric acid made by the wet process was used Cured products had 98% of their P₂O₅ contents in the available form and appeared dry and free flowing. The ammoniated and curing characteristics of the superphosphates were determined.



10. PARTIAL REPLACEMENT OF SULPHURIC ACID WITH NITRIC ACID IN MAKING SUPERPHOS-PHATE. David McKnight, J. F. Anderson, Jr., M. M. Striplin, Jr., and T. P. Hignett, Tennessee Valley Authority, Wilson Dam, Ala.

When rock phosphate was acidulated with mixtures of nitric and sulfuric acid containing about 30%



Sackett Builds The Equipment You Need

- ★ ONE MAN BATCH WEIGH SYSTEMS
- * PLANT MODERNIZATION PROGRAMS
- * CONTINUOUS AMMONIATION UNITS
- * MIXING AND SHIPPING EQUIPMENT

Aerating Equipment Automatic Control Equipment Basing Units Belt Conveyors Bucket Elevators Centralized Control Systems Continuous Acidulating Processes Continuous Ammoniating Systems Conveyors Coolers Crushers **Disintegrators** Dry-Mixing Units **Dust-Arresting Equipment** Fume Scrubbing Systems Hoppers and Spout Materials Handling Equipment Milling and Screening Units **Multiple Hopper Batching Systems** Oil Fired Dryers Plant Mechanization Systems **Pneumatically-Operated Gravity** Batch Mixers Pneumatically-Controlled Valves **Pulverizers** Sackett Timken Bearings Sacking Units Scales

Sackett Timken Bearings Sacking Units Scales Screens Shipping Units Shuttle Belt Conveying Systems Tailing Mills Vacuum Condensing Systems

PRODUCTION PROBLEMS get Backett

THE A. J. SACKETT & SONS CO. 1727 S. HIGHLAND AVENUE BALTIMORE 24, MARYLAND

water, the product solidified, and after 10 to 30 minutes it was a friable solid resembling fresh superphosphate. About half of the sulfuric acid required to make ordinary superphosphate was replaced by nitric acid. Two days' curing time was required to develop maximal PaO. availability which was 98% when the acid-rock ratio was equal to that stoichiometrically required to convert all the calcium in the rock to calcium sulfate, monocalcium phosphate, and calcium nitrate. After curing, the product was ammoniated in a drum mixer with anhydrous, gaseous ammonia, A typical product contained 6% nitrogen and 18% available P2Os. About 30% of the P2O6 was in a water-soluble form. The product appeared to have satisfactory physical properties and did not require drying.

Unlike previously developed processes that use nitric acid for acidulating rock phosphate, the present process may be carried out in equipment similar to that used for producing and ammoniating ordinary superphosphate. Either a batch, pantype mixer of a continuous, funneltype mixer was satisfactory for carrying out the acidulation step.

The results are considered to be technical and economically promising. Development of the process on a pilot-plant scale is being continued.



11. FERTILIZER BY FUSION OF ROCK PHOSPHATE WITH MAGNESIUM AND POTASSIUM SULPHATES. G. L. Bridger and D. R. Boylan, Department of Chemical and Mining Engineering, Iowa State College, Ames, Iowa.

Rock phosphate containing 32.5% P_zO_z was fused with magnesium sulfate and potassium sulfate, and with langbeinite ($K_zSO_z2MgSO_z$) in various proportions in a gas-fired laboratory furnace. The molten prod-

ucts were quenched by pouring into water or aqueous salt solutions.

Products of high POOs availablity (95%) were obtained when mixtures or rock phosphate and magnesium sulfate containing more than 75% magnesium sulfate were fused, when mixtures of rock phosphate and langbeinite containing more than 68% langbeinite were fused, and when various mixtures of rock phosphate with magnesium sulfate and potassium sulfate were fused. High P.O. availabilities were not obtained by fusing rock phosphate with potassium sulfate The postassium and magnesium contents of the products having high P2Os availabilities were largely water-soluble, but the phosphorus content was not water-

Typical products made by fusing a 30% rock phosphate-70% langveinite mixture at 2000°F. contained about 13% P₂O₅, of which at least 95% was soluble in neutral ammonium citrate or citric acid; 13% K₂O, of which at least 95% was water-soluble; and 11% MgO, of which at least 95% was water-soluble. The product contained most of the fluorine of the rock phosphate. The product was granular in form and was relatively nonhygroscopic; it can be stored in open containers without caking.

A pilot plant consisting of a feed agglomeration unit, a gas-fired shaft furnace, and a quenching system was operated successfully at a production rate of 125 pounds of product per hour with rock phosphate-langbeinite charge. Because of the relatively low melting temperature of the mixture (about 1600°F.), refractory corrosion was not severe and fuel consumption was less than for other types of fused phosphate fertilizers.

The product is believed to be of special interest for use in areas where nitrogen is supplied separately or is not needed, and where magnesium is needed.

THURSDAY AFTERNOON

Fertilizer Technology A. L. Mehring, Presiding

12. SCRUBBING SYSTEMS FOR FLUORIDES IN SUPERPHOSPHATE PLANTS. A. B. Pettit, Davi-

son Chemical Corp., Baltimore 3, Md.

Fluorine compounds are evolved



ornational GOES SACKETT AT FORT WORTH





Here is what this progressive company voluntarity

We have recently completed a manufacturing program of mixed fert with the machinery furnished by you for our new Fort Worth Plant and wish to take this opportunity to congratulate you on a job well done.

Yours very truly,

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

W. E. Saunderson,

Superintendent

KKETT

America's Foremost Designers and Builders

SUPERPHOSPHATE PLANTS . FERTILIZER MIXING PLANTS . RELATED PRODUCTION EQUIPMENT

THE A. J. SACKETT & SONS CO., 1727 S. HIGHLAND AVENUE, BALTIMORE 24, MD.

Architects and Manufacturing Engineers to the Fertilizer Industry since 1897

during acidulation of phosphate rock to produce superphosphate. Mellor rates fluorine as the most chemically active element known. Because of this characteristic, it will insist on combining with other elements found in phosphate rock and is evolved in the form of fluorides, never as elemental fluorine.

Scrubbing with water has been found to be an effective means of controlling emissions of these fluorides. Variations or scrubbing systems using water alone and in combination with a lime slurry are described. Operating experience is discussed, and design information and relative efficiency data are given.



13. MINING AND PROCESSING OF BORATES IN CALIFORNIA. M. H. Pickard, Pacific Coast Borax Co., New York, N. Y.

The world's largest deposits of borates are located in a relatively small area in the state of California, which could be circumscribed by a circle with a radius of about 90 miles. There are two major deposits: one at Searles Lake which is a brine deposit and the other at Boron in the Kramer District. This is a bedded deposit and the borate is recovered by conventional mining methods. Mining and processing methods used in the recovery of this ore are described.



14. STEAM CATALYSIS IN EXPEDITING FLUOCALCINATIONS OF DOLOMITE AND LIMESTONE FINES AT LOWER TEMPERATURES. W. H. MacIntire, University of Tennessee Agricultural Experiment Station, Knoxville, Tenn., and T. B. Stansel, American Zinc, Lead and Smelting Co., Mascot, Tenn.

Selective calcination of dolomite affords a concentrated and activated source of "available" magnesia for inclusion in fertilizers, for soil liming, and for production of magnesic chemicals. Citations that such calcination occurs at 725°C., in air, were sustained. In replacement atmosphere of steam, however, the

dolomite bond was disrupted at 550°C., and considerable decomposition of magnesium carbonate ensued. Although dolomite fines were stable at 600°C. in air, in helium, in nitrogen, and in ammonia, they underwent selective calcination when each atmosphere was replaced by steam. "Atomized" into the motional fines of dolomite at low pressure, steam functioned catalytically in expediting fluocalcination of the externally heated fines into calcines comprised of calcium carbonate and magnesia.

The demonstrated catalytic function of the injected steam in lessening temperature and duration in selective calcinations was applied to effect fluocalcinations of high-calcic limestone fines at 700°C., a lessening of 210°C. below the temperature established as "critical" in air. The resultant uncontaminated calcines proved superior to freshly drawn commercial limes of corresponding derivations, as to rapidity in hydration and formation of paste, and in longer dispersion in aqueous systems.

Tonnage outputs of selective calcines and of high-calcic lime were produced through steam injections into externally heated respective fines of dolomite and limestone during continuous runs in 6-month operations of a 3 x 20 foot cast iron Traylor "dryer."



15. DETERMINATION OF SOURCE AND DISTRIBUTION OF P.O. IN TRIPLE SUPERPHOSPHATE BY RADIOACTIVE PHOSPHORIC ACID. G. L. Bridger and J. W. Markey, Department of Chemical and Mining Engineering, Iowa State College, Ames, Iowa.

Experimental triple superphosphates were made by mixing Florida rock phosphate with phosphoric acid containing a small proportion of radioactive phosphorus. Wide ranges of acidulation and acid concentration, and a number of curing conditions were used. The relative proportions of P₂O₆ from the acid and from the rock were determined in the water-soluble, citrate-soluble and citrate-insoluble fraction of the

superphosphates by measuring their radioactivity.

Under ordinary curing condition (in open containers at room temperature), 96 to 98% of the P2Os from the acid was in the water-soluble fraction, 2 to 4% in the citrate-soluble fraction, and none was in the citrate-insoluble fraction. In the water-soluble fraction, the ratio of acid P2Os to rock P2Os was about 2.6 somewhat in excess of that required for monocalcium phosphate formation, which indicated the presence of other compounds formed by reaction with the acid. The citrate-soluble fraction consisted of a portion containing both acid P2Os and rock P2Os (possibly iron and aluminum phosphates) and a larger portion containing rock P2Os only, possibly beta trical-cium phosphate. The citrateinsoluble fraction consisted of unattacked rock phosphate and, in some cases, reverted rock P2O5; acid P2O6 was never present in the citrateinsoluble fraction.

Curing of the superphosphates under other condition of temperature and moisture content altered the relative distribution of $P_{z}O_{z}$ in the various fractions. However, as with normal curing, acid $P_{z}O_{z}$ was not found in the citrate-insoluble fraction.



16. CHEMICAL METHOD FOR AVAILABLE FERTILIZER NITROGEN IN UREA-FORMALDEHYDE COMPOSITIONS. W. A. Morgan and R. D. Kralovec, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

New fertilizer compositions prepared by controlled reaction of urea with formaldehyde supply available nitrogen of high agronomic value.

A simple, rapid, and reproducible method was developed which furnishes an index of this availability. The new technique is superior to existing methods and shows a close correlation with time-consuming soil nitrification tests. The procedure requires two determinations: (a) nitrogen insoluble in cold water in accordance with the official method of the Association of Official Agricultural Chemists. ["Methods of

. We Contract For Lead Installation From One Chamber To Complete Chamber Plants





SOUTHERN LEAD BURNING COMPANY

P. O. Box 4627

ATLANTA 2, GEORGIA

Tel. Walnut 2576

Distributors of Bitumastic Protective Coatings (Made by Koppers Company, Inc.)

POTASH

See us for your requirements of IMPORTED MURIATE

and also other

FERTILIZER AND FEED MATERIALS

BROKERS

- IMPORTERS
- COMMISSION MERCHANTS
- EXPORTERS

Woodward & Dickerson

1400 SOUTH PENN SQUARE, PHILADELPHIA 2, PA., U. S. A.
TELEPHONE: LOcust 4-5600 Cable Address: "Woodward" TELETYPE: PH 109



LION ANHYDROUS AMMONIA-For formulation. A uniformly high-quality basic product. Nitrogen content, 82.25%.

LION AQUA AMMONIA—For formulation or acid oxidation. Ammonia content about 30%. Other grades to suit you.

LION NITROGEN FERTILIZER SOLUTIONS-For formulation. Three types to suit varying weather and manufacturing conditions.

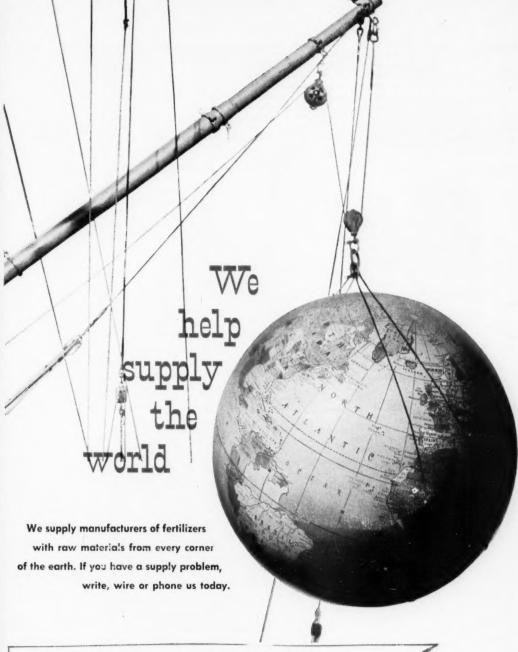
LION AMMONIUM NITRATE FERTILIZER—For direct application or formulation. Improved spherical pellets. Guaranteed 33.5%

LION SULPHATE OF AMMONIA - For direct application or formulation. Large free-flowing crystals. Guaranteed nitrogen content, 21%.



Serving Southern States Lian provides special technical assist-ance for fertilizer manufacturers. Write us if you have a formulation problem.

LION OIL COMPANY CHEMICAL DIVISION, EL DORADO, ARK.



H.J.BAKER & BRO.

ESTABLISHED 1850

600 FIFTH AVENUE, NEW YORK 20, N. Y.

Branch Offices: Baltimore . Chicago . Savannah . Tampo

Analysis," A. O. A. C., 7th ed., p. 15, 2.34 (1950)], and (b) nitrogen insoluble in a hot buffered phosphate solution determined on a duplical sample. The second analysis require the use of a fixed weight of the urea - formaldehyde composition Availability is the quantity of it soluble nitrogen which dissolves if the hot buffered solution, expressed as a percentage of the cold water-in a-b

soluble nitrogen (—— x 100).

FRIDAY

S. F. Thor

17. REACTIVITIES BETWEEN MAGNESTIC MINERALS AND SOILS. A 4-YEAR LYSIMETER STUDY. W. H. MacIntire, W. M. Shaw, and J. B. Young, University of Tennessee Agricultural Experiment Station, Knoxville, Tenn.

Because serpentine and olivine inclusions proved efficacious in superphosphate and effective in thermal processing of rock phosphate, yet were not beneficial in pot cultures, a 4-year lysimeter experiment was run to ascertain the behaviour of those silicates after incorporation to supply 1,000 pounds of magnesia per acre, with and without limestone. Behaviour of the incorporated silicates and their controls-magnesium sulfite, magnesite, dolomite, and limestone - were measured through determinations of the occurrences of bicarbonate, magnesium, calcium, potassium, nitrate, and sulfate in the rainwater drainage.

The silicate minerals did not enhance bicarbonate and magnesium outgo from the silt loam, but did cause moderate increases in such outgo from the highly acidic sandy soil. Dolomite caused greatest outgo of magnesium, but the limestone supplements diminished magnesium solutes. Calcium outgo was lessened substiantially by the magnesite was affected indecisively by the silicates, and was largest from jointly incorporated dolomite and limestone. Potassium outgo was lessened by the magnesic, dolo-mite, and limestone incorporations. The silicates did not promote

In mixed fertilizers containing including six size fractions of one of urea-formaldehyde products as the limestones, were used. Through only source of all the state of the limestones, were used.

PAG MISS

Ten different limestones and slags, ments, magnesium and boron were

GES

thwest



Southwest Potash Corarishad, New Mexico.

eds

annually.
ncreasing need of
industry for high
nwest Potash Corits facilities to pero more than twice

ration

*Trade Mark

OF DROADWAY & PINE CHIEF & N. Y.

© 1952 SPC

September, 1952

47

ALABAMA

Associated Cooperatives, Inc., Sheffield, will produce a 14-14-14 fertilizer in a new plant, scheduled to be in operation within a year, capable of producing 60,000 annual tons of fertilizer and 60 daily tons of nitric acid. Three shifts are planned from the beginning, according to officials. Frank A. Faulkinberry will be in charge. Distribution is to be through the Associated Cooperatives outlets in 22 states. The plant will use nitric acid, phosphate rock, potash, anhydrous ammonia and phosphoric acid. The buildings were constructed during World War I to make explosives and never operated. It has 47,000 square feet of floor space. A. J. Sackett will build the phosphate plant. The cost of conversion is listed at \$2,000,000 by L. C. Salter, executive vice-president and general manager of the Cooperative.

ARIZONA

Farmers Chemical & Equipment Co., Tucson, is planning to enter the mixing field during the next fiscal year, according to Henry P. Grimshaw.

CALIFORNIA

The Stauffer Chemical Company announced Aug. 6 that, after careful investigation, they have obtained the exclusive American rights to a new process for the production of ammoniated superphosphate. This unique process, which was developed and patented by Rumianca, Societa Per Azioni, Turin, Italy, produces pelleted material containing nitrogen and phosphorus in amounts which can be varied over a wide range, depending on demand.

About the same proportion of phosphate is water soluble in the material made by this process as in single superphosphate. The material may be bagged or shipped without the aging period usual in superphosphate manufacture. This reduces the cost of the plant by eliminating the need for storage facilities for curing single super. The capacity of existing plants may be enlarged

Around the Map

by the use of this process without the need for additional storage. The raw materials are the same as in the standard process — phosphate rock, sulphuric acid and ammonia.

The process will be made available to other producers under sub-licensing agreements.

American Potash & Chemical has acquired Eston Chemicals, Inc., Los Angeles, which makes farm and other chemicals.

Plans for a new \$850,000 agricultural-grade potash dewatering and drying plant to replace present facilities at Trona have been announced by A. J. Anderson. Trona plant manager for American Potash & Chemical Corp.

Field construction work will be under way in November and the plant is expected to be in operation by the middle of 1953, Anderson said

Among the more important features of the new facilities will be the use of two 15-foot-diameter horizontal Oliver filters and two large-capacity dryers. These will replace 16 hand-operated centrifuges and four small dryers, respectively.

Present agricultural-grade potash operations will continue during the period the new plant is under construction. The outdoor location of the new plant will permit utilization of the present conveyor system, which transports the product to storage.

Union Oil is about to build a nitrogen plant at its refinery, Wilmington, and has been issued a \$5,000,000 certificate of necessity by DPA. Homer Reed, chief engineer of the company's research division, designed the plant, which will produce 31,000 annual tons.

Monsanto has begun construction of a Krilium plant, from which to supply the Coast market, at Avon.

Filtrol Corporation, Vernon, is starting construction next month of a \$5,000,000 plant which will recover alumina and ammonium sulfate from the waste of its present plant. Shell is to handle the marketing of the sulfate.

FLORIDA

Naco's plant at Fort Pierce is progressing. Excavations are complete for building and rail sidings. Designed and equipped by A. J. Sackett, the \$650,000 plant which replaces the one destroyed last November by fire, just after its completion, will be in operation by December 31, according to vice-president O. C. Minton.

International Minerals & Chemical was cited last month by Liberty Mutual Insurance for outstanding safety at the Bartow plant. From February 23, 1951 to January 19, 1952 they put in 2,093,383 man-hours by 1100 employees without a disabling injury.

. . .

The Virginia-Carolina plant at Nichols will start construction this month, and they expect to have it in operation within a year. The plant will extract uranium as a by-product of the phosphate operation, as was announced here some months ago.

GEORGIA

C. P. Daniel's Sons, Senoia, have bought new mixing equipment which brings their capacity to 5,000 tons.

IDAHO

Bunker, Hill & Sullivan, Kellogg have decided to undertake the 300 daily ton sulphuric plant they have had under consideration at their smelter. Leonard Construction has been given a contract to build, with completion scheduled for late next year, but with full acid production not expected before early 1954. They will likely sell their output to superphosphate producers.

ILLINOIS

Monnie Wagonseller, Gibson, is setting up storage tanks for anhydrous ammonia with a capacity of 100,000 gallons, and will be ready to start distribution about the end of this month.

INDIANA

Standard of Indiana at its Whiting plant is now producing 55 daily tons of sulphur from waste sulfide gas.

IOWA

Simonsen Mill-Rendering Plant, Quimby, is planning progressive development of its facilities. Beginning in 1949 with sacked fertilizer as a side-line they moved into four-truck application. This summer they have built a bulk warehouse on a rail siding, and are planning in future to set up a small mixing plant. All this in an interesting letter from Dr. Dean Simonsen one of the seven Simonsens, five of them doctors, who operate the business.

KANSAS

Schrock Fertilizer of Congersville, Illinois has established new centers at Kiowa and Anthony for the distribution and application of anhydrous ammonia.

Kansas' Industrial Development Commission, of which Maurice E. Fager is director, has allocated \$1,- 500 for research into the production of sulphur compounds and high quality lime from the State's gypsum deposits. Dr. L. C. Heckert, at the State Teacher's College, Pittsburg, will conduct the project.

Cooperative Farm Chemicals, Lawrence, has bought 350 acres of land as a site for the \$16,500,000 nitrate fertilizer plant they are to



Webster malleable iron fertilizer, combination steel and malleable chains and sprockets give longer, trouble-free performance under severe operating conditions. Enjoy less downtime; specify Webster equipment for your next replacement installation or your original equipment purchases.

WEBSTER MANUFACTURING, INC.

Wohn John Bulk MATERIALS

Write for free folder describing the Webster Fertilizer Bucket. It fully explains its improved design and performance. No obligation, of coursel

BULK MATERIALS HANDLING EQUIPMENT

Since 1876 Serving All Industry

build, and is planning to buy other adjoining tracts.

LOUISIANA

Lion Oil has been approved by the State Board of Commerce for industrial tax exemption on the \$30,000,000 plant at Luling which was announced here last month, and which is expected to be in production by July 1954.

Consolidated Chemical Industries which is already working with Humble Oil on a \$3,500,000 sulphuric plant at Baton Rouge, is now planning a \$6,000,000 sulphuric plant at Esso Standard's Baytown plant.

MARYLAND

The Davison Chemical Corporation, Baltimore, received the National Safety Council's certificate of award for exceptional service to safety, given in recognition of "The Davison Sentinel", a publication which the company issues to all employees as part of its safety program.

The Sentinel makes extensive use of photographs and cartoons. An "Inquiring Photographer" section includes the photographs of employees from all plants and their answers to specific questions. Pictures of unsafe conditions and the way they were corrected are published, as are photographs of unsafe acts. Health columns by Davison medical directors, photographs of training activities, safety crossword puzzles, off-the-job safety, scenes of accidents, safety meetings and prize winners are among the features.

Recently the magazine ran an essay contest for children of Davison employees on the subject, "Why My Daddy Should Work Safely." In addition to accident statistics, histories of accidents occurring in the plants, their cause and what was done to prevent recurrences are printed. A "Here and There" column reports the news about employees.

A. B. Pettit, Davison's supervisor of industrial health and safety, is editor of the Sentinel and Miss Helen O'Hara assistant editor. A unique feature of the publication's policy is that of inviting management and union officials to serve as guest editors.

MINNESOTA

Northwest Cooperative Mills, St. Paul, write us they are planning to extend their Winona facilities. Plans are for a 40,000 ton acidulating unit,

a 25,000 ton contact sulphuric acid plant. A. H. Roffers is General Manager. G. O. McMillin is manager of the fertilizer division.

MISSOURI

Missouri Farmer's Association has added another unit to its string of anhydrous a m m on i a distribution points, this time at Vandalia, where a 30,000 gallon storage facility is being set up, and another at Louisiana, adjacent to their elevator in that community, with distribution by MFA Central Cooperative.

Monsanto's organic chemicals division has established at Creve Coeur a new agricultural and biological research unit.

OKLAHOMA

Oklahoma Fertilizer & Chemical, Oklahoma City, opened its \$500,000 fertilizer plant August 20th. It has a capacity of 50,000 annual tons, according to vice-president and general manager Archie T. Edwards.

OHIO

Iron Mountain Adhesives Co., Cleveland, are offering a product called Klep which is sprayed on slopes when grass seed is planted, and holds the seed in place. Then, they say, it merges with the soil and becomes a plant food.

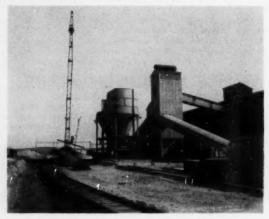
PENNSYLVANIA

Altoona FAM, Inc. has taken over the East Altoona incinerating plant and is converting it to fertilizer manufacture. One unit is already in place, three more are to be added. The plan originally was to accept only garbage deliveries, but will now tie in with the sewer system. Kurt Wandel. who invented the process used, says this will be the first combined conversion plant in the U.S., and that many communities are interested in the process.

Kelly Agricultural Products, Pittsburgh, are processing an activated sludge which is said to contain 3½ times more phosphate than other sludges. It is called Pitt-organite.

Southwest Potash Corporation, a new contender in the fertilizer ingredient field, and a subsidiary of the American Metals Corporation, will increase the capacity of its potash plant at Carlsbad, New Mexico and go into production this autumn as scheduled. They will produce about 210,000 tons of K₂O per year. Further expansion will depend upon market conditions.

Southwest Potash Corporation has designed its major facilities to enable rapid expansion to more than twice initial capacity.



It's incredible! ... the commodities that go into a 3/13/24/

bag

Polystyrene—Feeds—Calcium Chloride—Salt—Ammonium Nitrale—Cement—Rosin—Fertilizers—Sugar—Flour -Insecticides-Fine Chemicals-Clays-Rock Wool-and over 400 other products costing from less than a cent ound to over a dollar a pound are being packed in Bagpak Multiwall Paper Bags.

nternational Paper

GERRER THE

ACE SEEDING

BAGPAK DIVISION

TENNESSEE

W. R. Grace & Co. are threatened with a potential suit by citizens of Shelby County, where a \$20,000,000 plant to produce urea and anhydrous ammonia is planned. The location is in the Woodstock area, close to Memphis. DPA granted a certificate of necessity last March, when a site near New Orleans was under construction. A change in site need not require a new certificate, so it is felt that—the neighbors being willing—the plant can be located in the Memphis region.

Armour Fertilizer Works expects to complete by mid-November a \$235,600 expansion of its Nashville plant. Four new sulphuric acid chambers are being added.

. . .

Chemi-Dent Products, Kingsport, is manufacturing insecticides.

TEXAS

Swift & Co. will build a \$650,000 fertilizer plant at Houston, to replace the present plant there.

Phillips Chemical are to build a 405 daily ton triple superphosphate plant at Houston's Adams Terminal, which will be their fourth plant at that location. Phosphate rock from Florida will come in there, be produced with by-product sulphur recovered from Company gas fields. Their ammonium sulphate development will come into production about the same time as their ammonia plant at the Terminal.

Southwest Fertilizer & Chemical. Clint, are putting into operation this month their new 25,000 ton plant for acidulating phosphate at El Paso.

. . .

. . .

Mathieson Chemical are having neighbor trouble at their plant in Harris County, with the new Senator-designate Price Daniel — now State attorney-general—as the spearhead of the complaint. Plant manager John R. Beatty has pointed out the huge sums the company has spent and which have substantially reduced odors, fumes and dust.

Hy-Yield Fertilizer Co., Bonham plant, is also having neighbor trouble—the local citizens insisting that emanations from the plant are "offensive and injurious to human and plant life."

Texas Pancalite Co., Irving, has added a "mineral-base, non-synthetic" soil conditioner to its production, via a new division, known as the Pana-Loam Division. S. W. Johnson is president and general manager.

VIRGINIA

Virginia-Carolina. Richmond, in its annual report says that the future growth of the Corporation will depend on the creative thought of the young scientists in its expanded research department, which has about doubled in size in the past fiscal year.

Freeport Sulphur has completed aerial and ground surveys of the Gossan Lead, near Galax, and crews are now surface-stripping and diamond drilling. Freeport owns a sixmile segment of the Lead. P. F. Darnell of Freeport says the survey will not be completed for two years, and it would require two more years to install equipment, which will only be done if sulphur reaches \$30 a ton.

Smith-Douglass Company, Incorporated, has announced that the company has elected to proceed with its agreement to acquire a majority of the outstanding shares of Coronet Phosphate Company.

Smith-Douglass mailed to the remaining stockholders of Coronet an offer to purchase their shares at \$250 per share, being the same price to be paid to the majority stockholders. Smith-Douglass' obligation to purchase the shares was subject to the condition that at least 85 per cent of the Coronet stock be deposited pursuant to the terms of the offer. The offer expired on the morning of September 12th. Bankers Trust Company has been appointed agent for the purpose of receiving deposits of Coronet shares.

Smith-Douglass Company, Incorporated, with executive offices at Norfolk, Virginia, has fertilizer plants at Norfolk and Danville, Virginia; Streator, Illinois; Albert Lea, Minnesota; Shreveport, Louisiana; Kinston and Wilmington, N. C. It operates nitrogenous tankage plants at Norfolk, Virginia; East St. Louis, Illinois, and Shelbyville, Delaware.

Coronet Phosphate Company has extensive reserves of high grade rock in Florida. Coronet supplies phosphate rock to various fertilizer companies and defluorinated phosphate to manufacturers of poultry and animal feed. No changes in Coronet's management or customer relations are contemplated.

AUSTRALIA

The Federal Cabinet has decided to continue the subsidy on nitrogenous fertilizers up to 500,000 pounds in the 1952-53 season, as well as the similar subsidy on nitrate for fertilizer purposes, and on sulphate ammonia.

BRAZIL

The nitrogen fertilizer plant to be built by the Government in San Pullo will be in part financed by an exchange of sugar for machinery with German concerns, who have agreed to the transaction.

CANADA

Sulphur Converting Corporation, Roberval, Quebec, is about to begin construction of a \$4,000,000 plant to make sulphur from pyrites, using the European sulfidin process on ores coming from Quebec Chibougamau area.

FRANCE

Rohm & Haas farm chemicals are to be pushed in France by a new concern, Societe Minoc.

ISRAEL

Dead Sea Works, Ltd. controlled by the Isreali government on July 26 took over control of the rich potash deposits of the Dead Sea from the British-registered Palestine Potash Company. The plant at Sodom, which has been idle since the Pales.



For ammonium sulphate you can count on Koppers!

Koppers offers a good commercial grade of ammonium sulphate the ingredient that is so essential to fertilizer because of its high nitrogen content.

CHARACTERISTICS — Koppers Ammonium Sulphate comes in crystals with low free-acid and moisture content. The nitrogen content is guaranteed to be not less than 20.5%.

SHIPMENT-



From St. Paul, Minn. and Kearny, N. J., Koppers Ammonium Sulphate is shipped in 100 lb. and 200 lb. bags—also in boxcars and trucks. From Granite City, Ill. and Midland, Pa., it is shipped only in boxcars and trucks.

COAL CHEMICALS

KOPPERS COMPANY, INC. Tar Products Division, Pittsburgh 19, Pa.

tine war of 1948, will be put back into operation.

Fertilizers & Chemicals, Ltd. Haifa has had about \$100,000 capital added to its British, American, South African and Isreali money by Palestine Economic Corporation of Canada, Ltd. Fertilizer & Chemicals is now completing a sulphuric acid plant.

ITALY

Montecatini, the big Italian chemical and fertilizer organization is testing labor ownership. Each of the 50,000 employees has been given twenty shares, free — these shares representing 1/80th of the company capital. Each twenty-share gift has a present market value of \$32 and the 1951 dividend was 81/2%.

MEXICO

Gulf Sulphur of Delaware is reported to have found in Mexico, where they are operating, a deposit of sulphur at the end of a 349-foot drilling near Cristobal, which may be the deepest sulphur mantle in the world.

RUSSIA

The USSR has finally gotten around to claiming discovery of fertilizer. German and English papers please copy!

OBITUARIES

George W. Bennett, 65, of the Stadler Fertilizer Company, Fort Wayne, Indiana, burned to death August 16 in a motor accident.

Sidney H. Doggett, Jr., 54, president and founder of Doggett-Pfeil Company, Springfield, New Jersey, died August 16 of a heart attack in a Morristown, N. J. hospital.

Benjamin Elsas, 80, former presi-

dent and board chairman of Fulton Bag & Cotton Mills, and at his death chairman of the executive committee, died August 28 in Atlanta.

J. Edward Gathright, 61, who had been with Virginia-Carolina before his retirement, died July 28 in a Richmond, Virginia, hospital.

Herman F. Gothe, for 42 years with Southern States Phosphate and Fertilizer Company, Savannah, Geogia, of which he was vice-president and superintendent at the time of his death, July 20, in Savannah.

E. B. Griffin, 81, formerly with Armour Fertilizer, died August 15 in Morris, Georgia.

J. L. Herren, sales engineer with Davidson - Kennedy Co., Atlanta, Georgia, died August 28 of injuries received in a motoring accident.

Bart C. Pate. 61, for many years a firm member of the Pate Brothers Fertilizer plant, Sulphur Springs, Florida, died August 6 in Daingerfield, Texas.



A WHOLE FARM THRIVES ON NOURISHMENT

Kittens or cabbages . . . sheep or alfalfa . . . growth on a farm is a relentless process.

This never-ending struggle for survival and growth is a tremendous drain on the rich plant-food elements within the soil. No matter how deviously, every living thing must look to the soil for its basic nourishment.

Nature often cannot replenish these vital soil ingredients, and fertilizers containing POTASH are used. Sunshine State Potash, a product of New Mexico, helps make such fertilizers more than a mere soil nutrient. It strengthens the crops . . . aids in effectively resisting disease and drought.



UNITED STATES POTASH COMPANY, Incorporated, 30 Rockefeller Plaza, New York 20, N.Y.

BERKSHIRE

Long Time Specialists In

Magnesia For Agriculture

Berk's EMJEO (80/82% Magnesium Sulphate) Calcined Brucite (fertilizer grade) 70/74% Mg0 Calcined Magnesite 90/95% Mg0

Other Fertilizer Materials

INSECTICIDES — FUNGICIDES

Mercury Compounds for Agricultural Use

DITHIOCARBAMATES

Ferric - Zinc

EXPORT - IMPORT

BERKSHIRE CHEMICALS, INC.

420 Lexington Avenue, New York 17, N. Y.

Cable Address—"Berkskem" New York Sales Agents for F. W. Berk & Company, Inc.



Now you can get Fur-Ag, the popular organic conditioner in convenient 50 or 65 pound bags. This free-flowing organic conditioner speeds curing, and helps prevent mixed goods from caking. Here is an inexpensive conditioner that is sterilized before shipment—freed from plant diseases, insects, seeds and similar contaminants.

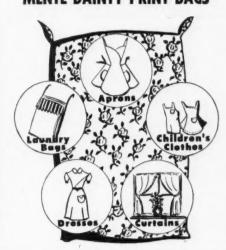
Fur-Ag is produced at Memphis, Tennessee and is available in volume the year around. Prices and more complete information on request.



The Quaker Qals Ompany

CHEMICALS DEPARTMENT 345 The Merchandise Mart Chicago 54, Illinois

Many Fertilizer Manufacturers Are Switching To MENTE DAINTY PRINT BAGS



These pretty "feed bag" prints no longer belong exclusively to the feed and flour industries. Fertilizer manufacturers are discovering that their customers like them, too! And no wonder! They make strong, sturdy, attractive bags—and the yardage obtained (over a yard in every bag) is prized by thrifty housewives for making all sorts of pretty things for the family and home.

Cotton bags are easy and quick to handle and stack—do not crack or puncture easily can be stored safely in any temperature have definite reuse and resale value.

With band or spot labels—both easily removed because of the special adhesives used.

Dept. B1

MENTE & CO., INC.

Isaac T. Rhea, Pres.

Box 1098 Savannah Box 690 New Orleans Box 204 Houston

Personals ...

Fred S. Lodge, secretary-treasurer, and one-time acting president of NFA retired last month after 18 years with the association. He was with Armour & Company from 1903 to 1933, rising from chemist to director of manufacturing, so he brought to the fertilizer industry a strong background of technical knowledge which contributed to the many important developments in the industry for which he deserves full credit. Fred is a grand gentleman, and we of Commercial Fertilizer wish him great happiness in his years of relaxation. We note that the announcement said "active service" which leads to the hope that Fred will still be making contributions for the good of the industry and the public we serve.

M. L. (Max) Brown has been made manager of Stauffer Chemical Florida sales, succeeding W. LeRoy Traylor. He has been with Fosgate Growers Cooperative, Orlando. Mr. Traylor, who had been with Stauffer for 14 years has established his own business, Traylor Chemical and Supply Co., at Apopka, Florida, with stocks in Winter Garden, Orlando and Lakeland. As sales manager of their Akron district, Stauffer has appointed R. K. Goodhue, with them since 1942.

Charles M. Tremblay, export manager of Mente & Co., New Orleans bag manufacturer, just back from a 75-day trip through Latin America, reports generally optimistic outlook for business in that region.

John P. Burrows has become general purchasing agent of International Minerals & Chemical, to fill the post made vacant by the death, June 19, of Joseph M. Coppinger. Mr. Burrows had been assistant to Mr. Coppinger since June 1944.

A. D. Adair, Jr., son of A. D. Adair of Adair & McCarty Bros., Atlanta, during six years in military service had built up a collection of foreign coins, which were stored in a safe at his father's office. Last month a sneak thief lifted the entire collection.

. . .

Ed Causey, manager of Interstate Fertilizer. Cario, Illinois, proved by their own noses to the local Rotary Club that his fertilizer ingredients have no odor. He took along bottled samples, which the assembled Rotarians sniffed as he told them about the workings of the fertilizer business. The local paper gave the speech full treatment, and Ed got over a message to his public.

. . .

A. B. Stewart, director of the Macauley Institute of Soil Research, Aberdeen, Scotland, speaking at the three-day symposium on soil and fertilizer in crop production stated that "English researchers have yet to find phosphorus in a form better than superphosphate."

J. M. Selden has been made manager of the Eastern division of Shell Chemical, according to word from J. Oostermeyer, president. He has been connected with the marketing of Shell products since 1933.

Howard P. Gould has been moved from the New Orleans plant food division of Swift & Co. to be manager of their phosphate mining operations at Bartow, Florida. He succeeds D. M. Wright who has retired after 36 years with the company. Mr. Gould joined them in 1934.

Walter S. Schamel has been appointed district manager of the Los Angeles office for American Wheelabrator & Equipment Corporation. He will open new offices at 3155 Leonis Blvd., Vernon, Los Angeles



Dean R. Gidney, who has been made vicepresident in charge of the sales department of US Potash, with which he has been associated since 1938.

58, on August 1, and handle the company's complete line of products, including dust collectors, abrasive blasting machines, and other foundry equipment.

Harold Bible has been promoted to the newly created post of assistant manager of manufacturing for Lion Oil Company. Bible, who has been technical assistant to president T. M. Martin since December 16, 1943, will assist J. B. Rogerson in the management of Lion Oil's growing manufacturing activities which include an oil refinery and chemical plant at El Dorado (Ark.,) and a new chemical plant now under construction near New Orleans (La.).

Mr. Martin has named Ralph Latimer, who has been supervisor of the contract section of Lion's land department, to replace Bible with the title of administrative assistant to the president.

. . .

M. Morrison Hihn, chemical engineer formerly with American Can Company, has joined the executive staff of John Powell & Co., Inc., manufacturers of insecticide materials, according to an announcement by H. Alvin Smith, president.

J. H. Friend, vice president of International Paper Company and

Safety FERTILIZER SECTION MEETS IN CHICAGO, OCTOBER 22-23

On the afternoons of October 22nd and 23rd, the Fertilizer Section of the National Safety Congress will present exceptional fertilizer plant safety programs at the Sheraton Hotel in Chicago, and on the morning of the 23rd will feature a demonstration of the multiple-shot method of blasting.

Although the Fertilizer Section was organized less than two years ago, it is, today, one of the largest and most active sections of the Safety Congress. Many have marveled at the speed with which the section was organized and the support it has received from the industry. Only a few know the story behind this excellent accomplishment.

At a social event during the 1950 National Safety Congress in Chicago, three men got together in a quiet corner to discuss the bad accident record of the fertilizer industry and what could be done about it. They were: J. S. Fields, Phillips Chemical Company; J. E. Smith, Spencer Chemical Company; and A. B. Pettit, The Davison Chemical Corporation. The Fertilizer Section was born that night when these men decided to organize it. They met one discouragement after another which might have stopped less determined men. They were told "The fertilizer industry is not interested in safety and will not support a Section." They didn't believe it. They were convinced that if top management understood the objectives, it would support the program. They were right!

Spencer Chemical was host to the first organizational meeting of industry representatives in Kansas City. Phillips Chemical was host to the second in Bartlesville at which A. B. Pettit was elected General Chairman, J. S. Fields, Vice Chairman, and J. B. Smith, Secretary and Treasurer, and the nucleus of the advisory committee was appoint-

From the first it was realized that if the necessary "top manage-. ment" support was to materialize it was essential that "top management" have a major part in formulating the program and policy of the Section. As a result, the 39-member Advisory Committee has a far larger percentage of members from the higher echelons of management than any other section of the Safety Congress.

Davison Chemical was host to the Advisory Committee when it met in Baltimore to plan the program for the first national fertilizer plant safety section. When the time came for the meeting to start in Chicago, the room filled quickly, and over two hnudred persons were unable to get in. The meeting was transferred to a ballroom which was rapidly filled to capacity. Thus the industry soundly disproved the unfair statement that "The fertilizer industry is not interested in safety and will not support a Section."

The phenomenal interest and support developed for the Section could not have been achieved except for the calibre of the trio which started the ball rolling. They had vision, determination, know-how, and the ability to so convincingly present their ideas as to obtain the active support of the fertilizer industry,

industry associations and trade iournals.

A. B. Pettit, who was elected as first General Chairman, is Supervisor, Industrial Health and Safety of The Davison Chemical Corporation, Baltimore, Maryland, and is responsible for industrial health, safety, fire protection, plant protection and air pollution control in all of Davison plants and mines. He is internationally known for his work in these fields, as well as a speaker and writer. He has often been called upon to participate in the investigation of many serious accidents-the most notable being the Texas City Tragedy.

Prior to joining Davison, Mr. Pettit was Manager of the Safety Section of the United States Government Synthetic Rubber Programs, responsible for the health, safety, fire protection and security program of the government's fiftyone synthetic rubber producing plants, valued at approximately one billion dollars. Due to the explosive and toxic chemicals used in the manufacturing processes, these plants were considered the most potentially hazardous in the United States, yet safety records show that under his direction the synthetic rubber industry became the Nation's

(Continued on page 69)

The Florida Phosphate Division of International Minerals & Chemical Corporation receives a safety award from Liberty Mutual Insurance Company for having completed 2,093,383 man hours of work during the period from February 25, 1951, to June 19, 1952, without a lost-time accident. Left to right, Al Waugh, Safety Director of the Florida Phosphate Division; Marion Wiggs, President, Local #35 of the International Chemical Workers Union; R. B. Fuller, Manager of International's Florida Phosphate Division, and Earle N. Lashmet, midwest divisional vice president of Liberty Mutual Insurance Company



Person

Fred S. Lodge, secretary-treasurer, and one-time acting president of NFA retired last month after 18 years with the association. He was with Armour & Company from 1901 to 1933, rising from chemist to director of manufacturing, so he brought to the fertilizer industry a strong background of technical knowledge which contributed to the many important developments in the industry for which he deserves full credit. Fred is a grand gentleman, and we of Commercial Fertilizer wish him great happiness in him years of relaxation. We note that the announcement said "active service" which leads to the hope that Fred will still be making contributions for the good of the industry and the public we serve.

M. L. (Max) Brown has been made manager of Stauffer Chemical Florida sales, succeeding W. LeRoy Traylor. He has been with Fosgate Growers Cooperative. Orlando. Mr. Traylor, who had been with Stauffer for 14 years has established his own business, Traylor Chemical and Supply Co.. at Apopka, Florida, with stocks in Winter Garden, Orlando and Lakeland. As sales manager of their Akron district, Stauffer has appointed R. K. Goodhue, with them since 1942.

Charles M. Tremblay, export manager of Mente & Co., New Orleans bag manufacturer, just back from a 75-day trip through Latin America, reports generally optimistic outlook for business in that region.

John P. Burrows has become general purchasing agent of International Minerals & Chemical, to fill the post made vacant by the death, June 19, of Joseph M. Coppinger. Mr. Burrows had been assistant to Mr. Coppinger since June 1944.

PAC MISS

brator & Equipment Corporation. He will open new offices at 3155 Leonis Blvd., Vernon, Los Angeles

J. H. Friend, vice president of International Paper Company and

GES SING

ION MEETS IOBER 22-23

ndustry associations and trade ournals.

A. B. Pettit, who was elected as irst General Chairman, is Superisor, Industrial Health and Safety of The Davison Chemical Corporaion, Baltimore, Maryland, and is esponsible for industrial health, afety, fire protection, plant protecion and air pollution control in all f Davison plants and mines. He is nternationally known for his work n these fields, as well as a speaker nd writer. He has often been called pon to participate in the investigaion of many serious accidents-the nost notable being the Texas City ragedy.

Prior to joining Davison, Mr. ettit was Manager of the Safety ection of the United States Govrnment Synthetic Rubber Prorams, responsible for the health, afety, fire protection and security rogram of the government's fiftyne synthetic rubber producing lants, valued at approximately one illion dollars. Due to the explosive nd toxic chemicals used in the nanufacturing processes, these lants were considered the most poentially hazardous in the United tates, yet safety records show that nder his direction the synthetic ubber industry became the Nation's

(Continued on page 69)

al Minerals & Chemical Corporation renaurance Company for having completed from February 23, 1951, to June 19, 1952, Waugh, Safety Director of the Florida Local #35 of the International Chemical ernational's Florida Phosphate Division, 5 president of Liberty Mutual Insurance

and Treasurer, and the nucleus of the advisory committee was appointed.

September, 1952



MARKETS

More Tax Tags Sold Than Ever Before

Based on tax tag sales and reports of fertilizer shipments from 13 reporting States, fertilizer sales in the 1951-52 fiscal year appear to be headed for a record high, according to The National Fertilizer Association, Washington, D. C.

Fertilizer tax tag sales and shipment reports received from 10 southern and 3 midwestern States indicate that about 10.6 million tons of fertilizer were sold in these States in the first 11 months of this fiscal year. This is a half-million ton increase over estimated sales during the like period during the preceding 12 months. Since sales in these States traditionally represent more than half the fertilizer sold in this country, a new nation-wide fertilizer consumption record will probably be registered when the final tally is made.

ORGANICS: Activity in the Organic fertilizer market is rather light. Domestic producers of Nitrogenous Tankage are in a heavily sold position at prices ranging from \$4.60 to \$5.00 per unit of Ammonia, bulk f.o.b. shipping point. Offers of imported material are also quite light and Nitrogenous Tankage is indicated at around \$6.00 \$6.10 per unit of Ammonia, bagged, CIF usual Atlantic ports.

CASTOR POMACE: Domestic production continues limited but supplies for fall shipment are available at \$37.25 per ton in burlap paper bags, seller's option, f.o.b. Northeastern production points. If shipment is in paper bags \$2.00 per ton allowance is made. Imported material is available only in limited quanity at prices around \$45.00 to \$48.00 CIF Atlantic ports.

DRIED BLOOD: This market has advanced recently probably due to demand from the feed trade on account of drought conditions. The Chicago price on unground, bulk Blood is around \$7.50 to \$7.75 per

FERTILIZER TAX TAG SALES AND REPORTED SHIPMENTS (In Thousands of Equivalent Short Tons) Compiled by The National Fertilizer Association

STATE	June		May		Jan-May		Apr-May-June		July-May	
	1952	1951	1952	1951	1952	1951	1952	1951	951-52	1950-51
Virginia	-	-	-	-		2000	331	288	-	-
N. Carolina	_	-	174	172	1,521	1,416		-	1,838	1,777
S. Carolina	17	9	35	32	726	670	200	152	985	978
Georgia	98	29	299	102	1,003	989	694	295	1,256	1,269
Florida	67	76	105	112	599	579	134	281	1,150	1,106
Alabama	40	110	63	146	834	753	358	477	1,062	980
Tennessee	74	81	138	84	376	310	310	257	584	430
Arkansas	34	36	8.6	81	260	316	196	216	324	392
Louisiana	17	13	31	25	224	222	101	86	292	296
Texas	29	23	47	48	349	323	139	130	571	579
Oklahoma	_	_	1.5	9	104	85	-	-	230	140
TOTAL SOUTH	376	377	993	811	5,996	5,663	2,463	2,182	8,292	7,947
Indiana	60	36	61	50	493	415	202	177	976	911
Kentucky	6	1.5	46	48	365	335	126	118	566	543
Missouri	18	35	67	74	456	412	201	162	746	649
TOTAL MIDWEST	84	86	174	172	1,314	1,162	529	457	2,288	2,103
California	-	*	-	-	-	-	1/	213	-	-
TOTAL OTHER	1000	-	-	-	-	-	1/	a213	-	1000
GRAND TOTAL	460	463	1,167	983	7,310	6,825	2,992	2,639	10,580	10,050

1.—Not available in time for inclusion in this report.
a—Not included in GRAND TOTAL.

unit of Ammonia, delivered Chicago area. The New York market is firm at about \$7.00 per unit of Ammonia.

POTASH: Movement of Domestic Muriate of Potash is in seasonal dimensions with demand good. Imported supplies are expected to be available at the ports for the new season at prices on 58 62% Muriate equivalent to the delivered cost of Domestic Muriate. Some supplies of Sulphate of Potash have already arrived in limited quantity. No change in Domestic prices have been announced.

GROUND COTTON BUR ASH: This source of Potash, primarily in the form of Carbonate of Potash and testing 38/42% K20, is available for prompt and future shipment at prices approximating closely the delivered cost of Domestic Sulphate of Potash

PHOSPHATE ROCK: Movement against contract commitments to domestic acidulators is in good volume and no change in basic prices has been noted. Export sales are somewhat behind and the market is quiet.

SUPERPHOSPHATE: Demand for Normal and Tripple Superphosphate continues strong and prices are at ceiling levels. Rather limited stocks are in some areas but no large inventory is reported.

SULPHATE OF AMMONIA: Movement of Steel Mill Sulphate of Ammonia is gradually increasing that it will take a good while to reach normal dimensions. No change in prices has been noted and demand is strong.

AMMONIUM NITRATE: The supply situation is still exceedingly tight and demand excessive. One domestic producer has announced an increase in price of \$1.80 per ton, f.o.b. shipping point, but no change is indicated by other producers.

NITRATE OF SODA: Stocks continue adequate and movement is in seasonal dimensions.

IMPORTED CALCIUM AMMONI-UM NITRATE: It is reported the first shipment of this type material will arrive sometime in September at a Gulf port. Importers expect to have supplies available for late fall and spring movement in good volume.

GENERAL: Activity among fertilizer manufacturers is in seasonal dimensions and demand from farmers for fertilizer is not very great. Manufacturers are primarily concerned with lining up raw materials for the new season.



Yes, MARIETTA has BIG ideas, and BIG concrete storage silos that offer large capacity, labor saving storage and materials handling facilities to meet your present and future needs.

MARIETTA concrete stave silos can be erected in any arrangement-line, cluster, or combined with existing units for added storage. They will protect your agricultural chemicals from fire, acid, air, moisture and the elements and reduce insurance rates. Require little or no upkeep expense. Can be equipped with conveyors and hoppers to facilitate handling, increase plant value.

Let a MARIETTA engineer put his ideas to work to increase your storage capacity and handling efficiency. Write, wire or phone for an appointment ... TODAY.

The MARIETTA CONCRETE CORPORATION

Marietta, Ohio 509 Fifth Avenue New York 17, N. Y. Pulaski Hwy, at Race Rd. Baltimore 21, Md.

PRINT YOUR OWN SHIPPING CONTAINERS OR MULTI-WALL BAGS as You need THEM



Industrial's Auto Printer

is suitable for imprinting information, addresses, marking, or whatever you may require on your containers or multi-wall bags. It is capable of printing os many as 2400 units per hour. Eliminates hand stenciling. This is just one of Industrial's coding and marking machines designed specifically for your needs to assure more efficient marking and movement of materials on production lines. Marking equipment is also available for conveyor line use.

Let us help you-send us your marking problem; we will do the rest.

INDUSTRIAL MARKING EQUIPMENT CO. Designers and Builders of Marking Equipment for Industry Dept. C.F., 454 Baltic Street BROOKLYN 17, N.Y.

CFA Moves Offices

The California Fertilizer Association offices are now located in Suite One, Boothe Building, 475 Huntington Drive, San Marino 9. California. The phone number is PYramid 1-1044.

CFA Has List Of Qualified Speakers

The California Fertilizer Association is organizing a Speakers Bureau so that requests for qualified speakers on the use of commercial fertilizers can be provided on reasonably short notice when made by farm organizations, nursery and floriculture groups, home gardener organizations, service and women's clubs, etc. Those making up the Speakers Bureau will consist largely of officials and technicians of the fertilizer manufacturing and mixing concerns throughout the State of California; the Phoenix, Arizona area; and in the vicinity of Pocatello, Idaho.

NFA Develops New Meter

A new plant food meter has been developed by National Fertilizer Association which it is hoped will play a real part in the sale of fertilizer, by keeping farmers aware of the need for replacing plant food as the crop takes it out of the soil. On one side it shows the plant food removed from the soil by a long list of crops, and gives the exact breakdown of N, P and K in terms of crop and yield-tons.

On the other side it similarly appraises the nutritive value of variout plants, again giving the separate N. P and K values.

The meters are designed so that the name of your fertilizer and your company-or of your dealers, if you choose, can be printed on the plastic cover. They are priced at 17¢ eachplus a small charge for special imprinting

Kentucky Program Defies Drought

The Kentucky Green Pastures Program went right ahead, despite the fact that some of the pastures, due to drought, were not so green and that their owners naturally were more concerned with the drought problem than with any meetings. Yet the meetings were held and they were well attended.

One of the factors that has helped push this program along has been the excellent support of the local newspapers, many of which have issued special Green Pastures editions. And the very fact that pastures had been hit, made many all the more anxious to learn better methods.

Part of the annual Green Pasture activities in Kentucky is the selection of County Master Pasturemen in August. This is followed up by the choice of a District Master Pastureman, who will be chosen in October.

THE 6th INTERNATIONAL GRASSLAND CONGRESS

We of the fertilizer industry, who are accustomed to measuring our congregations in the low hundreds, find it a bit startling to view the Grasslands Congress which measures attendance by thousands. The number of foreign men of science, alone, who attended was more than many of our conventions can boast. And the American scientists, industrial representatives and the thousands of farmers who came to the field day, made up a really impressive crowd.

Nor could the visitor fail to be impressed with the smooth-running organization which handled so complex an affair so smoothly. This is the result of the time and effort and money of many public and private officials. Industry, by its exhibits and its contributions helped finance the event. But the personal time and effort of the unsung workers in the background must have been prodigious.

The program itself was so farreaching that it required the establishment of 12 separate sections, which met and conferred and heard papers in various portions of the campus of the Pennsylvania State College. Each of these sections had a program subcommittee, working under the general program committee, headed by Will M. Myers, University of Minnesota, and, consisting of a list of names well known throughout the world of agronomy. And back of them four Federal agencies, and 65 other cooperating organizations and the land grant colleges and universities of the United States.

48 foreign countries were represented with 331 registered. Some 1200 domestic delegates registered. And as has been said, hundreds of others came to special functions.

The keynote of this huge meeting may be found in a few sentences. The Secretary of Agriculture quotLike so many organizations of real merit, the Grassland Congress idea was the result of visits to each other by several men in Europe to exchange opinions on grassland improvement. In 1927, the first Congress organized and met in Peipzig, and convened at three year intervals until World War II caused a hiatus. The meeting this year puts it back on the three-year schedule. While originally Congress attendance was limited to Central Europe, today it has become international in the fullest sense.

ed a statesman of 80 years ago who said, "Grass is the forgiveness of nature, her constant benediction. It yields no fruit in earth or air, and yet should its harvest fail for a single year, famine would depopulate the world." And Robert M. Salter, Chief of the Soil Conservation Service, USDA, led off his talk with the statement: "Grass has contributed more to human welfare that has any of the world's other natural resources."

But more to the point of this gathering, seriously and for a whole week conferring about how to make the most of grass was the statement of J. M. Fry, director of the Pennsylvania extension service, who said "Grassland farming is nothing new in Pennsylvania. Grasses, and later legumes, have always been part of our agriculture. The trouble has been that because this state is a natural grass state, this crop has been taken for granted, so that little has been done to improve materially its yield, or to appreciate fully its importance in our livestock industry until recent years."

And a message delivered by a representative from Norris E. Dodd, Director General of the UN Food and Agriculture Organization pointed up the world-wideness of the things these others said:

"I am an Oregon cattleman and

wheat grower. So I have long been interested in grass. In a real sense I have made my living from grass.

"According to an old Biblical saying, 'The eye of the master fatteneth his cattle.' I would like to amend that and say, 'The eye of the master watcheth the grass that fatteneth his cattle.' It is the grass on which the master must keep his eye even more than on the cattle. If the grass be not good, the cattle will surely waste and perish.

"Before becoming Director-General of FAO I watched with great satisfaction, both as a farmer and as an official of the U. S. Department of Agriculture, the gradual growth of interest and activity in grass improvement here in the U.S.A. It has not been an easy road, as you will all agree.

"I tried to take full advantage of every forward step you scientists made, and I tried to help make it possible for other farmers in this country to take advantage of your work. You were helping all of us to do a better job of farming, to make a better livelihood, and to provide more and better animal products for American consumers.

"Since joining FAO I have been concerned with grass improvement on a far wider scale. My observations of farming all over the world have shown me vividly the vast

need for much greater concentration on range and pasture improvement. I have been in areas where thousands of work animals could not do a good day's plowing in the spring because they were so weak from poor feeding. I have been in areas where half the new spring lambs perished because their dams had such poor feed. I have seen unrestrained grazing by goats strip a whole countryside down to bare earth, making it a prey to terrible erosion. You are the people who can help end these tragedies."

The interest in business in grassland farming was well expressed by Walter B. Garver of the US Chamber of Commerce agriculture department. Here are some of the things he said under the title, "Grassland Farming is Everybody's Business:" to talk about the share which government officials, educators, investors, farmers, businessmen, and consumers have in grassland progress.

"Each of these groups has an interest in the progress we may be able to make with our pasture and forage production and use. Starting with government officials, it is a general task of governments to have deep interests, on behalf of all their peoples, in public policies on two specific fronts. The first of these, to the extent respective governments are held accountable, deals with the basic question of providing ample food supplies for their peoples. The second interest, not perhaps so universal as the first, is in the question of agricultural resource conservation and manage-

"The interest of educators in

about such lines as equipment and mechanization, seeds and feeds, fertilizers and limestone, and insecticide and weed treatment materials.

"The character of grassland development makes a considerable difference to the business in these and related lines. A third type of business with a well-justified interest in grassland progress is represented by those firms who supply farmers with consumer goods and services. Here the interest is in the farmer as a Market, potential or realized.

"I suppose the interest of the farmer—that is, the farm operator or manager—in grassland progress is so obvious that it need not be mentioned. It is his management decisions that are the key to progress, and it is his production that is the meat in the soup.

"Finally, but not least important, is the interest of the consumers. If he is not interested in grassland agriculture it is only because he (or she) is not as conversant with the roots of his strength as he should be. It is the character and quantity of his future food supply that is involved.

"As to the consumers' stake in the grassland 'business', I suppose one need only hint at the complaints about food prices that are an almost chronic subject of conversation, gossip, and politics. Certainly the level of food costs is a stake to every consumer, and the pressure for lower real costs is persistent.

"It should not be taken as axiomatic that more and better grassland farming will inevitably reduce food prices. We have many bridges to cross before the answer will be clear. But it does seem probable that in several countries, including the United States, proper grassland practice will add to total food output capacity at lower real cost of production.

"The U.S. potentialities in grassland are so promising that many cautious students see in the movement a promise of the next 25 years of a revolution in the last quarter century of technologic progress in agronomy, animal husbandry, mechanization, and chemistry.

(Continued on page 68)

THE PERMANENT PRESIDENT

Dr. Phillip V. Cardon, Permanent President of the International Grassland Congress was head of the Agricultural Research Administration. He retired from this post and threw himself into the task of heading the committee which organized the Congress, and as chairman of the US Delegation. The Congress elected him permanent President.

"It may seem a little strange to some of you at first blush that business as such has a deep-rooted interest in our grassland progress. But a little insight into the whole complex of our closely-knit agriculture-industrial-commercial economy reveals a unity of purpose and a one-ness of aim that soon becomes obvious.

"We now stand at the threshold of a great re-awakening of interest in,—and work on—grassland culture and use. Indeed, it would be more accurate to say, rather than a threshold, that it is a high place on the mountainside where we see, in part at least the panorama of realizable possibilities.

"Let us spend a few moments looking at the ways in which it is the important business of several major groups in society. I should like grassland progress stems largely from the fact that they are the incubators and keepers of knowledge, and important agents of its dissemination.

"The interest of investors centers around their position as land-owners, or the holders of other resources vital to grassland farming and the changes it may bring.

"The interest of businessmen is pertinent from a number of angles, depending on the nature of their business. Processors and distributors of farm products focus their interest from the standpoint of their function as handlers and sellers of the products of the soil. The interest of those businessmen which serve the farmer with production goods and services arises from the important question of what kind of agriculture they are to serve. Here we are talking

In the Field of

ALLIED FARM CHEMICALS

Shell Chemical Farm Chemicals Division

Shell Chemical Corporation, which recently purchased the Denver firm of Julius Hyman & Company, will centralize all of its agricultural chemical activity in Denver. According to Mr. J. Oostermeyer, Shell Chemical President, Denver will become the Marketing headquarters for all of the firm's agricultural products, except fertilizers. Manufacturing and research activities are currently established at the Rocky Mountain Arsenal plant nearby. The new organization will be known as the Julius Hyman & Company Division of Shell Chemical and will market the aldrin and dieldrin, manufactured by Julius Hyman & Company; Shell's soil fumigants, D-D and CBP-55; and its long established line of spray oils which are marketed on the West Coast.

Mr. F. W. Hatch has been appointed Vice President of Julius Hyman & Company and Manager of the new Division. L. F. Stayner, of Shell Chemical's New York sales staff, will be Sales Manager of Julius Hyman & Company Division. P. E. Joyce heads an Export Sales and Development Department, located in New York and responsible for the development of markets for Shell agricultural chemicals overseas and for all sales of agricultural products outside the United States and Hawaii.

The Product Development Department of Julius Hyman & Company Division will have W. E. McCauley, formerly of Julius Hyman & Company, as Manager, with L. G. Smith, of Shell Chemical's New York Agricultural Products Department, as Assistant Manager. The Technical Service Department of th new division will be managed by L. Lykken, formerly with Shell Development Company of Emeryville, California, with M. M. Rosson, of Shell Chemical's New York offices as Assistant Manager.

In addition to the new division office at Denver, Area Sales Offices are being established in New York, Atlanta, Chicago, Houston, St. Louis, Denver, San Francisco, Los Angeles and Portland. Area Managers and Sales Representatives for these offices will be announced at a later date.

New Fungicide In Production

F. W. Hatch, Manager, Julius Hyman & Company Division, Shell Chemical Corporation, Denver, Colorado, has announced that the soil fungicide which has been widely tested under the code name CBP-55 will be in commercial production during the next 4 months at the company's Denver plant.

CBP-55 has demonstrated outstanding effectiveness as a soil fungicide in control of soil pathogens in tobacco seed beds and for control of root-rots of strawberries and nursery stock. The production schedule assures the availability of CBP-55 for large scale spring treatments. Pilot plant stocks are adequate for fall supplies.

Chemical Manufacturing Moves To Larger Quarters

Joseph Virdone, President of Chemical Manufacturing Co., Inc., announces the removal of its New York offices from 21 West Street to new and larger quarters at 444 Madison Avenue, New York 22. The new 'phone number is Murrary Hill 8-8700

Chemical Manufacturing Co., Inc., is sales agent in the United States for Industrial Chemicals produced by Imperial Chemical Industries, Ltd., London, England.

The company also is export sales agent for Westvaco Chemical Division, Food Machinery Chemical Corporation.

Stauffer Catalog Revised

Stauffer Chemical Company has just issued a revised 112 page edition of their general catalog covering basic chemicals for industry and agriculture. As in the earlier editions, considerable data are given on all products, and numerous tables on specific gravity, viscosity, specific heat, solubility and other properties give valuable assistance to the user of Stauffer chemicals. For your copy, write the company at 420 Lexington Ave., New York 17, N. Y. or its nearest branch office.

DOLOMITIC



ANALYSIS GUARANTEED



LIMESTONE

. . . 60% Calcium Carbonate . . . 39% Magnesium Carbonate

WILLINGHAM-LITTLE STONE COMPANY

1201-4 Healey Building, Atlanta 3, Ga.

"38 Years Service to the Fertilizer Industry in the Southeast"

Disaster

(Continued from page 19)

damages sustained, availability and need for credit, and geographical description of the area, the State Director sends his recommendation for designation to Administrator of the Farmers Home Administration in Washington. The Administrator and members of his staff examine the submission and if it is in order submit it to the Secretary of Agriculture.

When the Secretary of Agriculture makes the designation, the action is announced by officials of the Farmers Home Administration in the area.

Purposes:

Loans may be made for the purchase of such items as feed, seed, FERTILIZER, livestock, and equipment to enable farmers to continue operations, to replace or repair damaged buildings, fences, drainage and irrigation systems, or for land leveling and clearing of debris on individual farms where such actions are necessary because of the disaster.

Obtaining the Loan:

As his first step in obtaining a loan, an applicant goes to the office of the local Farmers Home Administration supervisor serving his county and explains the losses or damage he has sustained. He signs an application which includes the statement that he cannot obtain adequate credit from other sources. Before a disaster loan is made, the threemember county committee signs a certification that the applicant is eligible and that they, the members, believe he will carry out to the best

of his ability the obligations required of him under the loan.

Most applications are processed and checks received by the borrowers in less than a month after they apply. Most loans are less than \$2,500 and are approved by the county supervisor. State Field Representatives must approve loans from \$2,500 to \$5,000. The State Director's approval is necessary for loans on up to \$12,000. Where other than the county supervisor's approval is required, more time may be needed.

Terms:

Loans secured by chattel liens may run for five years, and if secured by real estate mortgages they may be made for a period up to ten years. Upon prior approval of the Administrator, longer terms may be granted on disaster loans secured by real estate. All disaster loans bear 3 percent interest on unpaid principal, and are scheduled for repayment over the minimum period of time consistent with the borrower's ability to pay. The period may not ex-

"DISASTER" AREAS

States and counties within certain states designated by the Farm Home Administration as "Disaster Areas" and approved by the Secretary of Agriculture through August 11, 1952, are as follows:

Entire States

Maine, Massachusetts, New Hampshire, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Kentucky, Tennessee, Arkansas.

Illinois Countie

Gallatin, Hardin, Johnson, Massac, Pope, Saline, Williamson.

Oklahoma Counties

Adair, Atoka, Cherokee, Garvin, Johnston, LeFlore, McIntosh, Murray, Pittsburg, Sequoyah.

The following counties were formerly designated for disaster loans because of last year's floods. They are now eligible for disaster loans because of drought: Bryan, Carter, Craig, Deleware, Jefferson, Love, Marshall, Mayes, Ottawa, Wagoner.

Missouri Counties

Barry, Camden, Carter, Christian, Dade, Dallas, Dent, Douglas, Greene, Howell, Iron, Laclede, Lawrence, Madison, Maries, McDonald, Newton, Oregon, Ozark, Polk, Pulaski, Reynolds, Shannon, Stone, Taney, Texas, Washington, Wayne, Webster, Wright, Butler, Cole, Morgan, Ripley.

California

Kern.

The following counties were designated formerly for other reasons, but are now eligible for loans because of drought: Barton, Benton, Bollinger, Cedar, Crawford, Franklin, Gasconade, Hickory, Jasper, Miller, Osage, Phelps, St. Clair, Vernon.



ALUMINUM TANK 9'-0" Diameter x 30'-0" Long 12,825 Gallons

"Cole" can furnish tanks made of steel, aluminum and stainless steel — built in accordance with ASME Code to meet all insurance requirements. Measuring tanks of Stainless Steel are carried in stock.

We invite your inquiries for high pressure Storage Tanks to handle Ammonia and Nitrogen Solutions. Anhydrous Ammonia — complete with all steel fittings. Also Elevated Water Tanks, Acid or Oil Storage Tanks, Bins, Boilers, Stacks, etc.

R. D. COLE MFG. COMPANY

Newnan, Ga.



STEEL TANK 8'-6" Diameter x 38'-6" Long 16,500 Gallons

In the Field of ALLIED FARM

Shell Chemical Farm Chemicals Division

Shell Chemical Corporation, which recently purchased the Denver firm of Julius Hyman & Company, will centralize all of its agricultural chemical activity in Denver. According to Mr. J. Oostermeyer, Shell Chemical President, Denver will become the Marketing headquarters for all of the firm's agricultural products, except fertilizers. Manufacturing and research activities are currently established at the Rocky Mountain Arsenal plant nearby. The new organization will be known as the Julius Hyman & Company Division of Shell Chemical and will market the aldrin and dieldrin, manufactured by Julius Hyman & Company: Shell's soil fumigants, D-D and CBP-55; and its long established line of spray oils which are marketed on the West Coast.

Mr. F. W. Hatch has been appointed Vice President of Julius Hyman & Company and Manager of the new Division. L. F. Stayner, of Shell Chemical's New York sales staff, will be Sales Manager of Julius Hyman & Company Division. P. E. Joyce heads an Export Sales and Development Department, located in New York and responsible for the development of markets for Shell agricultural chemicals overseas and for all sales of agricultural products outside the United States and Hawaii.

DOLOMITIC

GUARANTEED

WILLINGH

12

PAG MISS

"38 Years Service to the Fertilizer Industry in the Southeast"

GES SING

Terms:

Loans secured by chattel liens may run for five years, and if secured by real estate mortgages they may be made for a period up to ten years. Upon prior approval of the Administrator, longer terms may be granted on disaster loans secured by real estate. All disaster loans bear 3 percent interest on unpaid principal, and are scheduled for repayment over the minimum period of time consistent with the borrower's ability to pay. The period may not ex-

R" AREAS

states designated by the Farm Home and approved by the Secretary of Agrias follows:

hire, North Carolina, South Carolina, cucky, Tennessee, Arkansas.

Pope, Saline, Williamson.

Johnston, LeFlore, McIntosh, Murray,

erly designated for disaster loans benow eligible for disaster loans because Deleware, Jefferson, Love, Marshall,

Dade, Dallas, Dent, Douglas, Greene, lison, Maries, McDonald, Newton, Ore-Shannon, Stone, Taney, Texas, Washler, Cole, Morgan, Ripley.

nated formerly for other reasons, but f drought: Barton, Benton, Bollinger, ade, Hickory, Jasper, Miller, Osage,



STEEL TANK 8'-6" Diameter x 38'-6" Long 16,500 Gallons

ALUMINUM TANK 9'-0" Diameter x 30'-0" Long 12,825 Gallons Boilers, Stacks, etc.

R. D. COLE MFG. COMPANY Newnan, Ga. ceed the useful life of the principal items of security. If for crop production purposes, loans must be repaid when the income is produced from sale of crops involved.

Security Requirements:

Loans secured by chattel liens may full amount of the loan by: (1) a first lien on all livestock, farm equipment and machinery purchased with proceeds of the loan; (2) a first lien on crops to be produced; and (3) the best lien obtainable on as much of the other livestock, machinery, and equipment owned by the applicant at the time of the loan as is necessary to protect the Government fully. Real estate mortgages are required where advances are used primarily to improve real estate or where a real estate mortgage is necessary to fully protect the Government.

GRASSLANDS

(Continued from page 63)

"In fact a bit of caution is in order. It is greatly to be hoped that there will be a minimum of false starts, of blind alleys, and of delaying detours,—that a great and growing enthusiasm will not spend itself in destructive mistakes.

"Grass in thy fields for thy cattle . . . that thou mayest eat and be full.' Thus it was that Moses capped the climax of his vision of the promised land. The supreme reward of the long journey was to be hay and pasture for cattle, that his people might once again eat and be full, as they had not for so long.

"May we not today, then, take from this old lesson by Moses, renewed zeal for grassland farming as the keystone of complete agriculture, rededicate our combined efforts to the promulgation of better grassland as the acme of agricultural achievement, and show to every citizen from land-owner to consumer that 'grassland farming is, indeed, everybody's business."

ABSTRACTS

(Continued from page 45)

tural Research, Campbell Soup Co., Riverton, N. J.

Urea spray with a suitable wetting agent applied to the foliage in the regular spray program for insects and disease control has proved very effective in supplying nitrogen to certain vegetable crops. Urea and ammonium nitrate in equal mixture can be used for certain vegetable crops at a greater concentration than either material alone.

SAFETY

(Continued from page 59)

safest major industry. The health, fire and plant protection records were equally impressive.

Mr. Pettit joined Rubber Reserve on loan from the Goodyear Tire and Rubber Company, Akron, Ohio, where he spent seventeen years in various executive capacities, including production and personnel relations. At one time, he went to England to train supervision and key personnel in the operation of a new Goodyear plant employing over two thousand workers. He was Manager of the Safety and Personnel Training Division of the Goodyear synthetic Rubber Corporation when loaned to the government.

He is General Chairman, Engineering, Statistics, Contest, Health, Data Sheets and Instruction Cards Committees, Fertilizer Section, National Safety Congress; a member of the Board of Directors, Baltimore Safety Council; the Committee of the President's Conference on Industrial Safety; the Air Pollution Abatement Committee of the Manufacturing Chemists' Association and of the sub-Committee on Legislation Principles. He is also a member of the American Society for the Advancement of Science, the Metropolitan Chapter (New York City), American Society of Safety Engineers, the Veterans of Safety, the International Association of Chiefs, the American Public Health Association, the Maryland Society for the Prevention of Blindness, the American Meteorological Society, the Air Pollution Control Association, and is Editor of "The Davison Sentinel", which was recently given an award by the National Safety Council for exceptional service to safety.

386,781 Manhours Without Accident!

R. N. Conners, vice-president and general sales manager of Chase Bag Co., and Commissioner Forest H. Shuford, representing North Carolina and U. S. Department of Labor,



LAW & COMPANY Founded 1903

FERTILIZER CHEMISTS

Two Convenient Laboratories P. O. Box 1558 Atlanta, Ga.

P. O. Box 629 Wilmington, N. C.

Wiley & Company, Inc.

Analytical and Consulting Chemists

Calvert & Read Streets

BALTIMORE 2, MD.

officiated at ceremonies recently held in Reidsville, North Carolina. Award was made to W. B. Richardson, Manager, and employees for finest safety record for 1951 throughout the entire Chase organization. From July 24, 1946 through July 11,

1950 the Chase employees completed 709,699 manhours without an accident. One small accident occurred on July 12, 1950. From July 13, 1950 to June 1, 1952, they completed 386,781 manhours without a single accident!

meet the high qualification standards established for these positions. Candidates preferably should be between 30 and 60 years old. Salary rates range from \$5,913 to \$11,130 a year. In addition, employees may receive quarters and living allowances, and in some cases, post differential allowances of from 10 to 25 percent of the base salary.

POINT 4 SPECIALISTS NEEDED

The U.S. Department of Agriculture in reporting that 227 USDA employees are now stationed in 25 foreign countries on technical assistance assignments, pointed out the job opportunities that still exist in this field of activity, particularly in the Middle East.

Point Four agricultural jobs are available to qualified applicants in Afganistan, Cyprus, Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Saudi Arabia, Turkey, and Yemen, the Department said. The greatest needs are for agricultural engineers, specialists in cooperative enterprise, and range management and soils specialists.

Also, the Department said, opportunities for overseas experience

exist in other areas of the world as well, due to the normal turn-over in personnel as American specialists complete their assignments, usually of two-years duration, and return home. Such positions include the specialties mentioned above and others as well.

The Department's Point Four activities are part of the broad program of international technical assistance that includes agriculture, public health and sanitation, and education. The overall program is directed by the Technical Cooperation Administration of the Department of State.

Applicants for Point Four jobs are not required to take Civil Service examinations; however, they must

This country's technical cooperation programs, which include Point Four, require professionally trained people of proven ability. These employees must have had several years of successful professional experience and must be skilled in their professions. They must have leadership ability, maturity of judgment, and the personal qualities required of foreign representatives of the United States government.

Interested persons who are qualified by training and by several years of responsible professional experience in agriculture are asked to submit Form 57, Application for Federal Employment, or write to the Office of Personnel, U. S. Department of Agriculture, Washington 25, D. C. Form 57 may be obtained from First- and Second-Class Post Offices.

JAITE

HEAVY DUTY MULTI-WALL PAPER BAGS

OFFER DEPENDABLE PROTECTION FOR YOUR FERTILIZER

THE COMPANY JAITE

"Manufacturers of Paper and Paper Bags"

JAITE, OHIO



CLASSIFIED ADVERTISING

NEED AT ONCE combination bookkeeper-secretary (male) age 30-40, who can act as office manager for plant in mid-South, Delta area. Must be familiar with fertilizer materials, closing books, running inventory. Salary \$300 and bonus. Write Box #98, c/o Commercial Fertilizer, 75 Third St. N. W., Atlanta, Ga.

FOR SALE: 2-5' x 40' Ruggles-Coles Direct Heat Rotary Dryers; also Class A-2, 4' x 20': Class XF-4, 54" x 25'; 1-5'6 x 24' welded shell. Send us your inquiries for Jaw, Gyratory and Roll Crushers, Ribbon and Drum Mixers, Pulverizers, Bucket Elevators, Hammer Mills, Vibrating Screens. Belt Conveyors. We buy your idle machinery. Our 35th year. CONSOLIDATED PROD-UCTS COMPANY, INC., 14 PARK ROW, NEW YORK 38. N. Y.

WANTED: General Foreman with knowledge of upkeep of Union Special sewing machine heads, for dry mixing fertilizer plant. Salary commensurate with experience and ability. Box # 14 c/o Commercial Fertilizer, 75 Third St., N. W., Atlanta, Ga.

WANTED POSITION as dry mixing or acidulating plant superintendent, four years experience. Box #17, c/o Commercial Fertilizer, 75 Third St., N. W. Atlanta, Ga.

FOR SALE: 1 Special Heavy Duty Stedman Bagger including superstructure electrical equipment, Two each Bag Conveyors, Union Special Sewing Machines and Stands and Exact Weight Scales. Also Chattanooga Buggies, Toledo Floor Scales, 1-40 ft. Shuttle Conveyor, 1-20 ft. Trough Belt Conveyor. For prices contact Lange Brothers, Inc. #1 Angelica St., St. Louis 7, Mo.

FOR SALE: 5 Model HA Hough Payloaders, 12 cubic foot capacity, pneumatic tires. A fast compact bulk handling unit. \$1,475 each fob Atlanta. Fulton Auto Exchange, 190 Edgewood Ave., N. E., Atlanta. Ga., telephone Main 2134.

Wanted by plant superintendent opening in fertilizer plant, preferably in South. Age 32. Six years experience: graduate engineer. Experience in acidulating operation; mixed goods and making of sulphuric acid. Excellent references. Address Box #94, c/o Commercial Fertilizer, 75 Third St. N. W., Atlanta, Ga.

Cut Production Costs -

Speed up your plant with ATLANTA UTILITY FERTILIZER MACHINERY

Fertilizer Mixing Systems Elevators Revolving Screens Mixing Plows Clod Breakers

Fertilizer Shakers Cage Mills Batch Mixers Write Today for Descriptive Folder

ATLANTA UTILITY WORKS

EAST POINT, GA.



CHAINS AND SPROCKETS

Jeffrey Hercules Chain and "CHAIN-SAVER" Sprockets make the best wearing combination you can put into your plant. Chains can be reversedhave full diameter, D-shank pinsoval eccentric barrel. Sprockets have flanged edge-takes part of the load.



Also Digger and Loaders, Pulverizers, Conveyors, Elevators, Chains and Attachments, Feeders, etc.

THE JEFFREY MANUFACTURING COMPANY

933 North Fourth Street, Columbus 16, Ohio

Alex. M. McIver & Son

BROKERS

Specializing SULPHURIC ACID

Ground Cotton Bur Ash, 38/42% K2O Potash.

Nitrogenous Materials

Castor Pomace

Phosphate Rock

"Riceland" Ground Rice Hulls

Representatives Morgan Brothers Bag Company, Inc.

Bags-Paper and Textile Ammoniated Base and Superphosphate

> **Dolomitic Lime** (42-44% Magnesium Carbonate)

> > POTASH

PEOPLES OFFICE BUILDING Charlesten

South Carolina Phones: Local 3-3436-3-3437----LD 921-922



METHODS AND RESULTS

Many different methods of promoting Grasslands Farming are being pursued. All promote greater productivity and profit for our farms.

The program shows tangible results in millions of acres of improved pasture land and greatly increased farm income.

To the agencies who initiated and are successfully spreading the gospel of "Green Pastures" we pledge our continued support.

POTASH COMPANY OF AMERICA Carlsbad, New Mexico

GENERAL SALES OFFICE ... 1625 Eye Street, N.W., Washington, D. C.
MIDWESTERN SALES OFFICE ... First National Bank Bldg., Pearia, III.
SOUTHERN SALES OFFICE ... Candler Building, Atlanta, Ga.



Send for this New Bulletin



Use this new 16 page illustrated bulletin to quickly select the right machine for the job. Containscomplete data on sewing heads, columns, conveyors, accessories, and overall dimensions plus more than fifty illustrations of machines, plant installations and types of closures. Write for your copy now.

... to help you cut costs in your plant!

At today's high operating costs, you can't afford to have inefficient production methods in your plant. That's why it pays to take advantage of Union Special's faster, more dependable, more economical bag closing equipment. Union Special bag closers give you more production...per man...per hour because every Union Special is engineered and built with your basic requirements in mind—to do a specific bag closing job at lowest mind—to do a specific bag closing job at lowest possible unit cost. For recommendations, see your local Union Special representative or write UNION SPECIAL MACHINE CO... 10 N. Franklin St., Chicago 10.

BAG CLOSING MACHINES